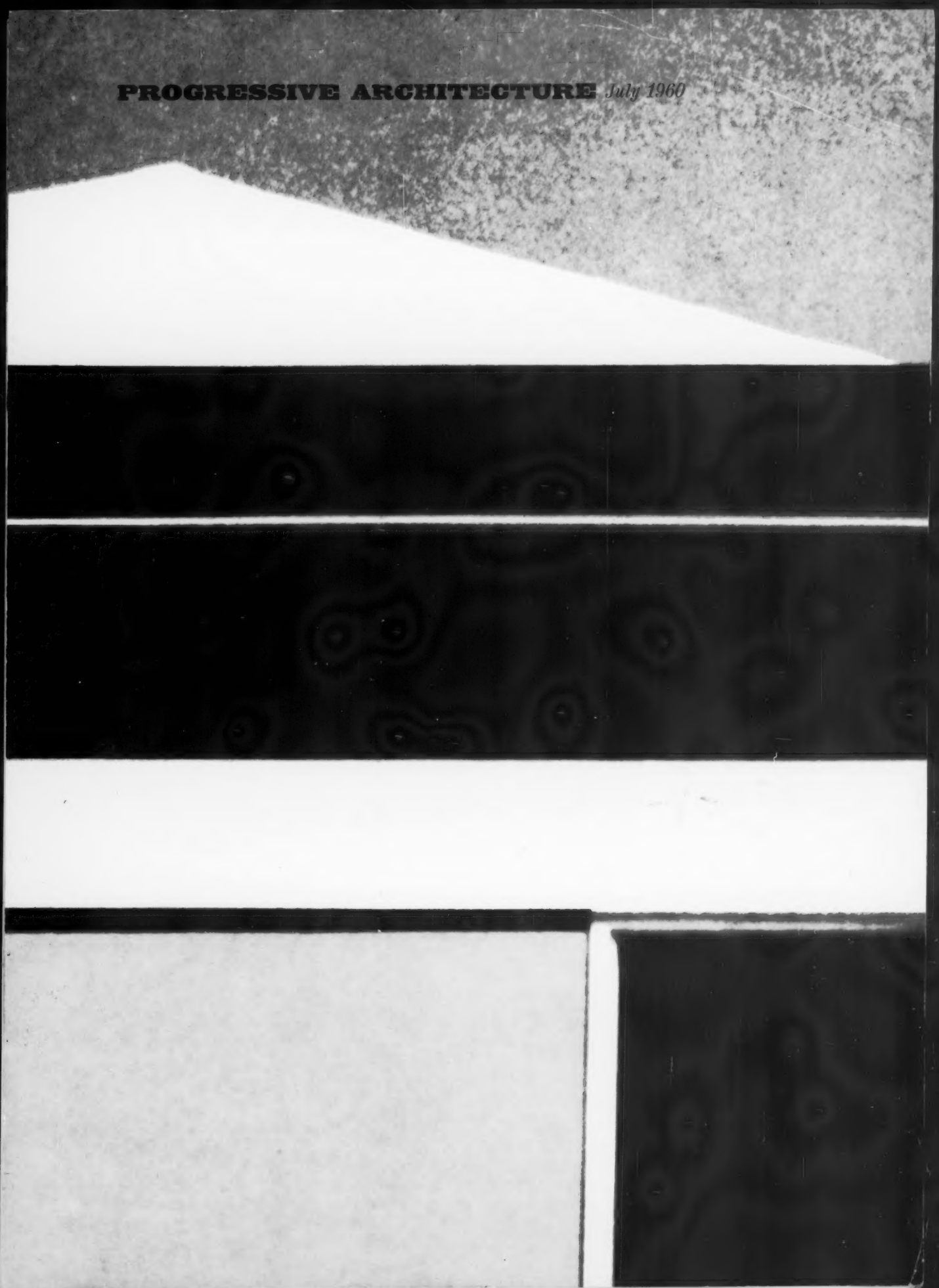
PROGRESSIVE ARCHITECTURE *July 1960*



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Architect: John Graham & Company, New York, New York

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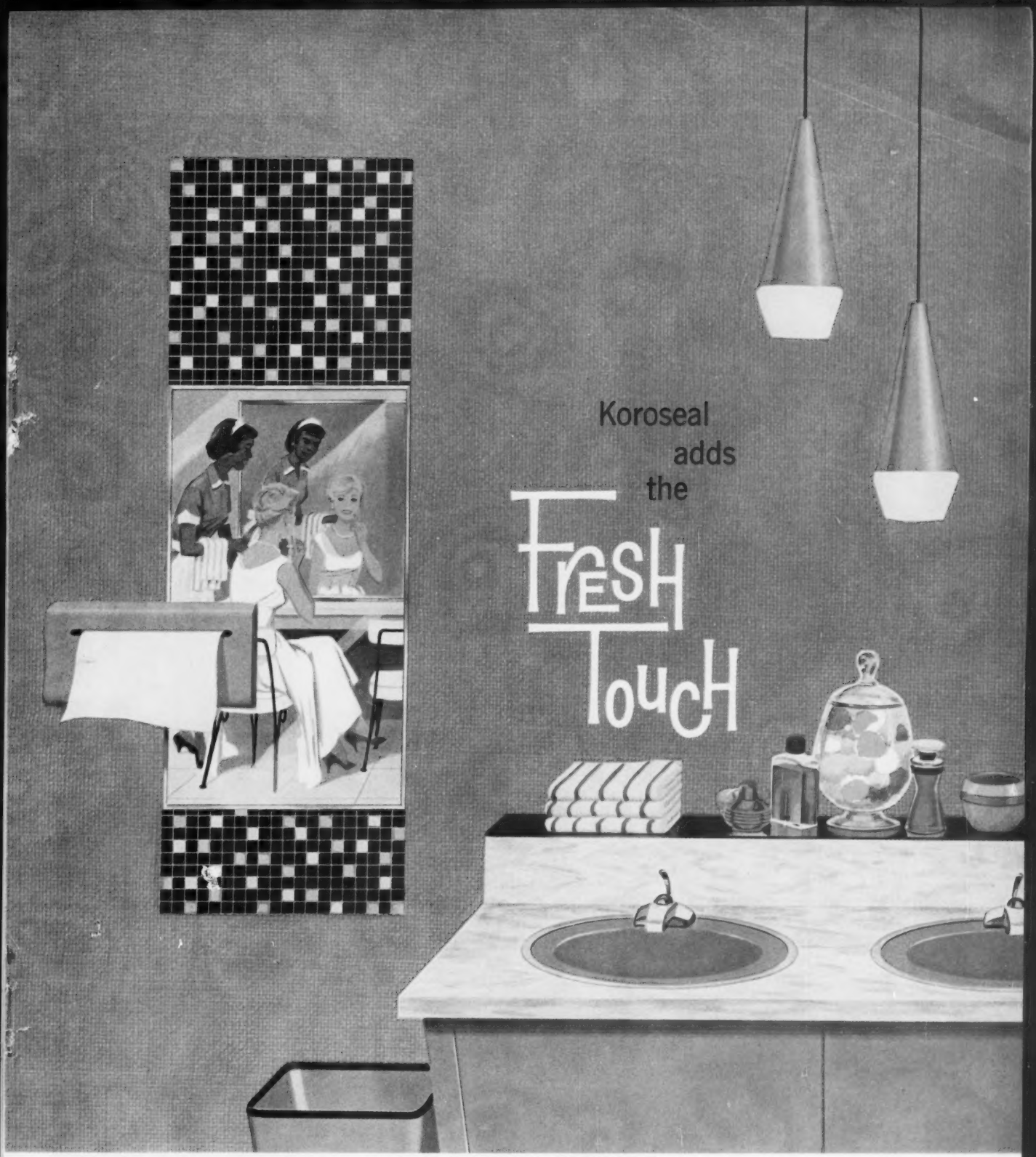

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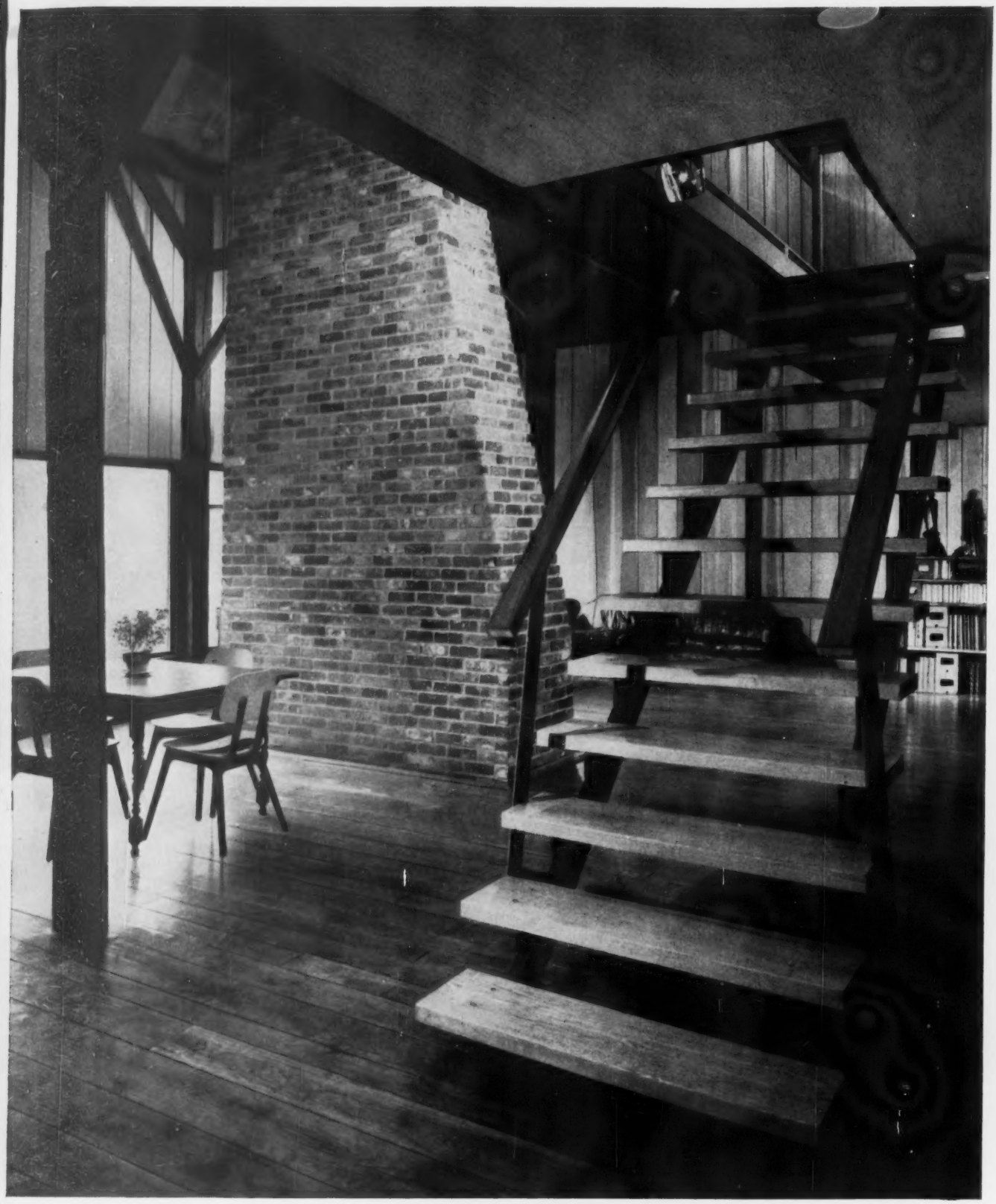

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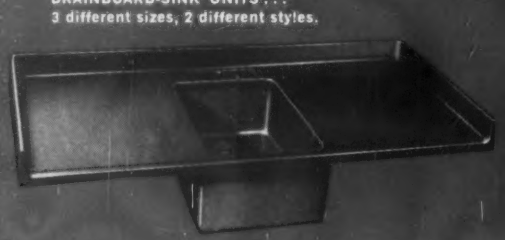

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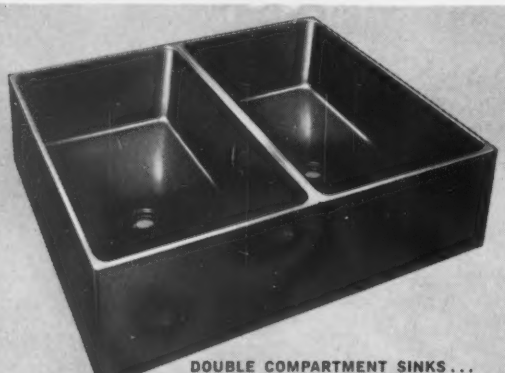

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164 TECHNICAL ARTICLES

Articles comprising the MATERIALS & METHODS Section for July includes: "Composite Construction in Steel" . . . "Packaged Sewage-Disposal Plants" . . . "Closed-Circuit TV" . . . plus SPECIFICATIONS CLINIC and MECHANICAL ENGINEERING CRITIQUE

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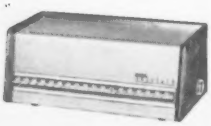

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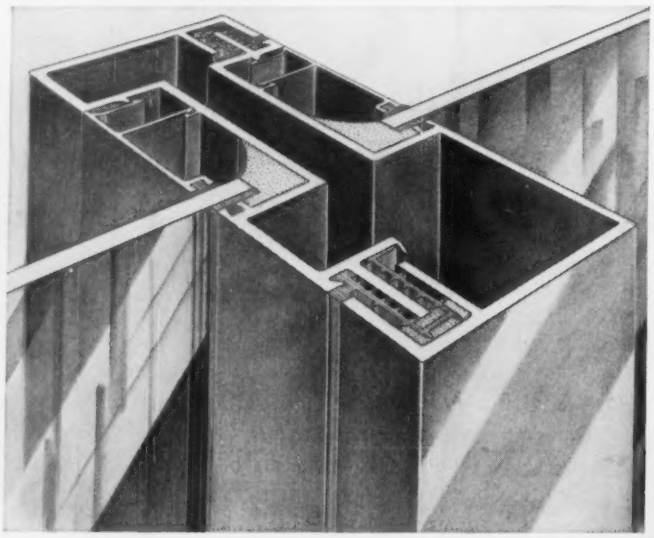
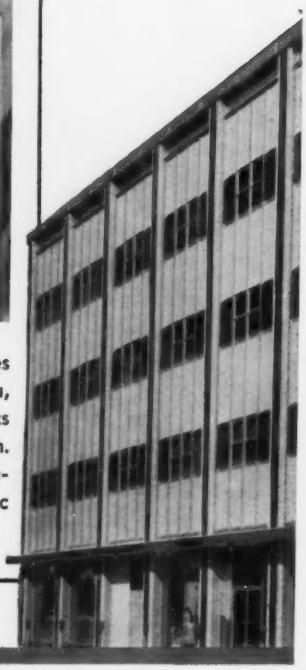


PERSPECTIVE VIEW SHOWING the Amarlite® Trimline Wall, Series 808, made by AMERICAN ART METALS COMPANY, Atlanta, Georgia, selected for the Meridian Building because of its strong characteristics of watertightness under all conditions of expansion and deflection. Erection was made easily and quickly; glazing was very simple. Extrusions are Revere Aluminum. This curtain wall is but one of many basic designs available from AMERICAN ART METALS COMPANY.



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General Contractor: RICHARD S. FLINK, INC., Miami Beach.

Curtain Wall Manufacturer: AMERICAN ART METALS COMPANY, Atlanta.

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Meridian Building, Miami Beach, Fla.

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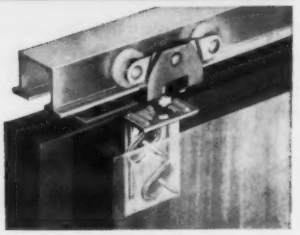

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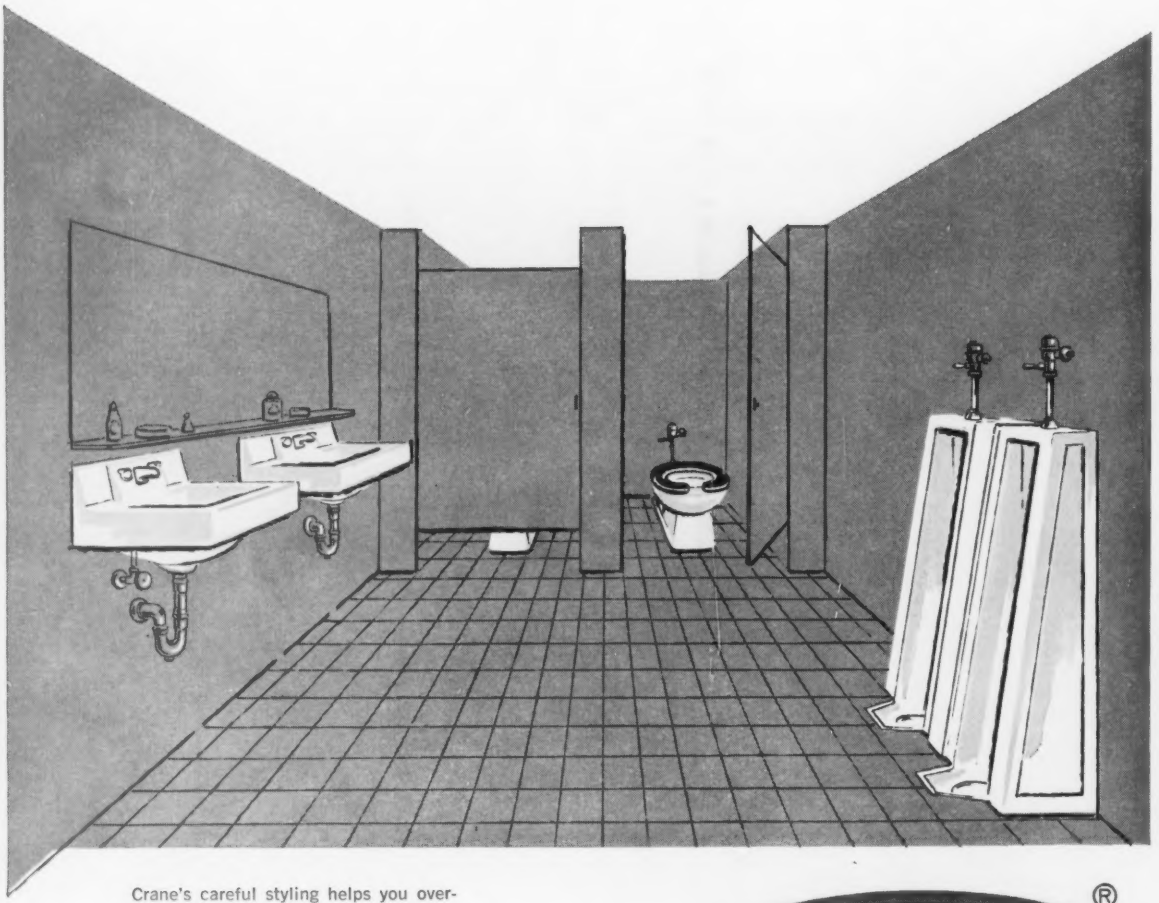

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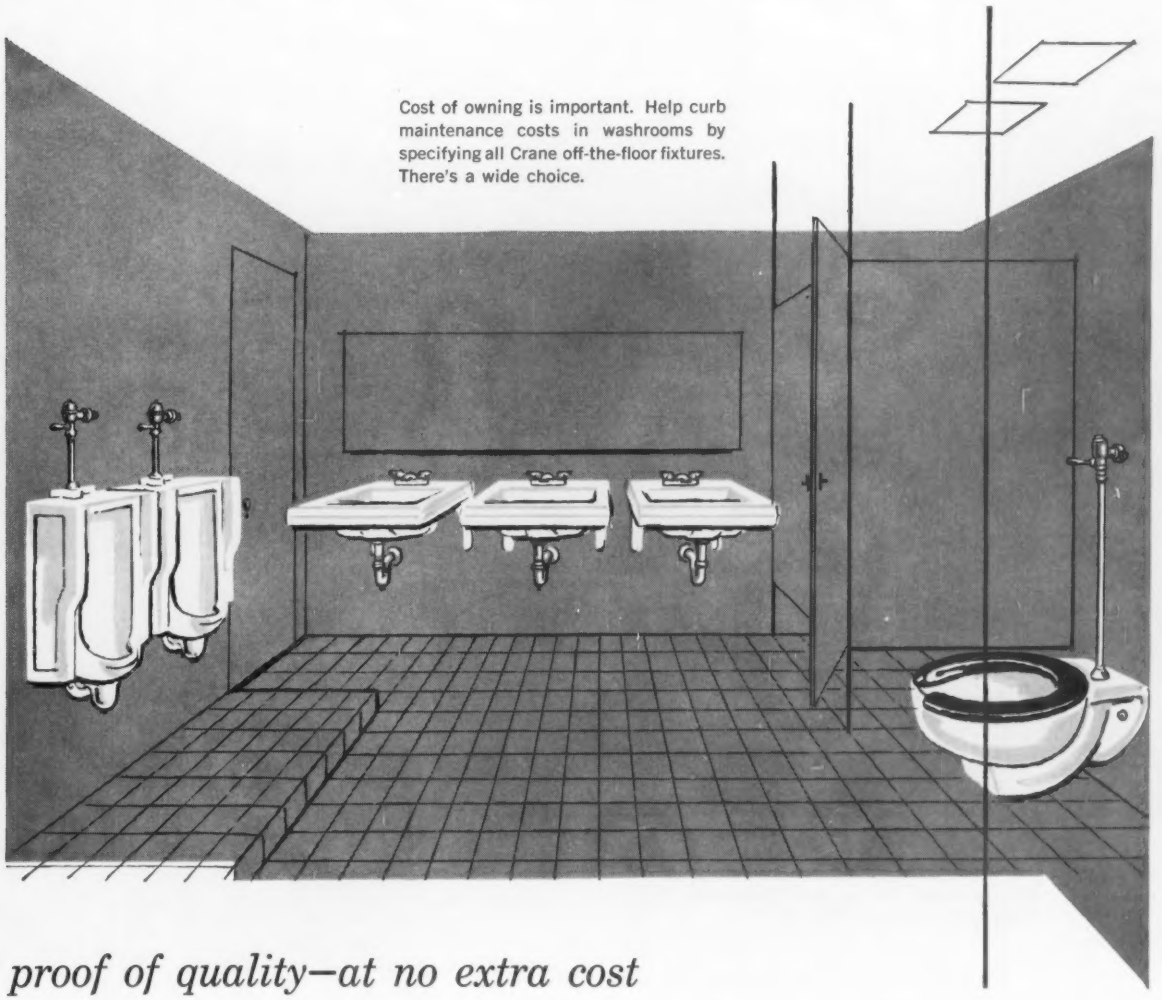

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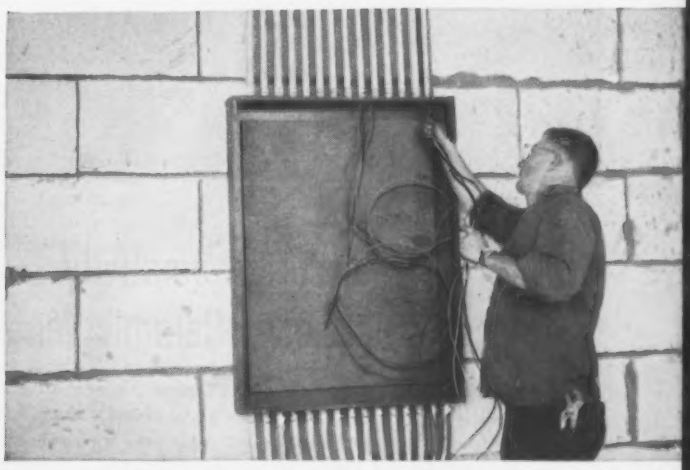

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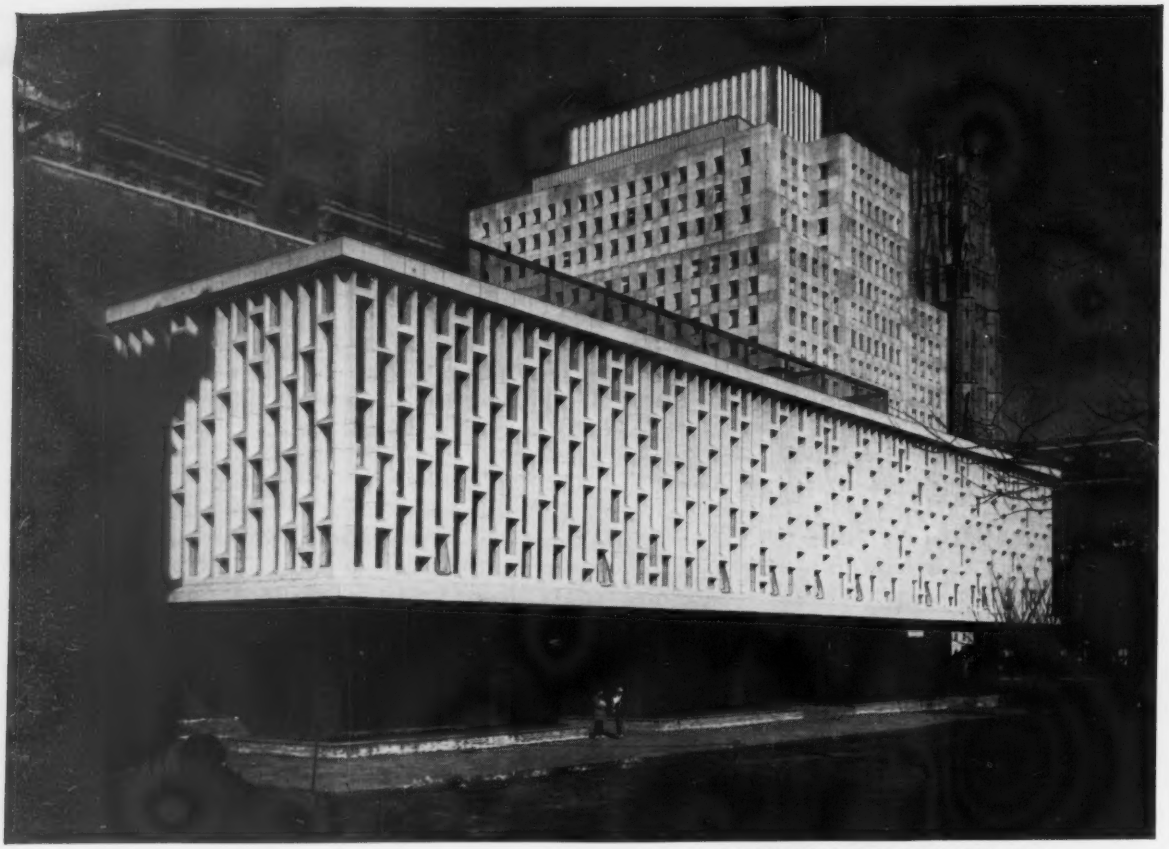

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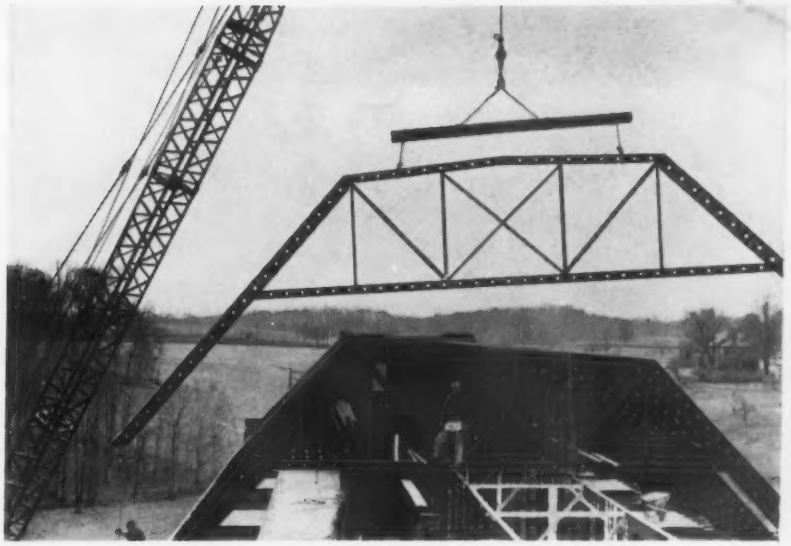
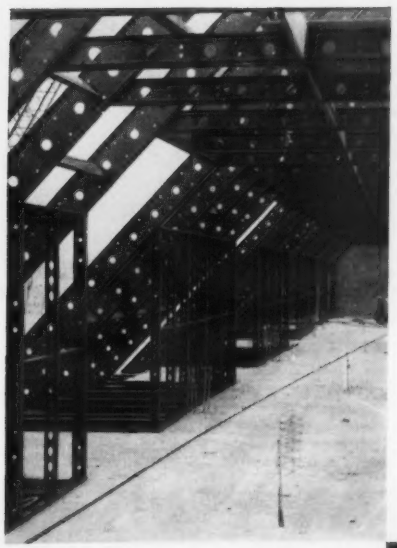


After fabrication, roof trusses were raised into position by a mobile crane and securely welded in place in a matter of minutes. Smaller panels were light enough to be carried and erected without handling equipment.

Architect tells why he selected Penmetal structural framing for Methodist Country House



According to the architectural firm of Dollar, Bonner, Blake and Manning, "The reasons for our choice were numerous, but the most important were that the light steel would provide a lightweight incombustible frame and that the nailable feature of the members would provide a simple means of attaching other materials.

"We were also convinced that light-steel framing was no more expensive than other types of construction, and that proper panelization would result in a rapid rate of progress in erection. The latter two points were subsequently proven to be correct by the results achieved in this project."

The structure of Methodist Country House combines a minimum of heavy steel with extensive use of Penmetal framing. Interior walls are plaster over Penmetal rib lath, which was nailed to double studs. Roof trusses were fabricated from 10", 15-gage and 6", 16-gage joists.

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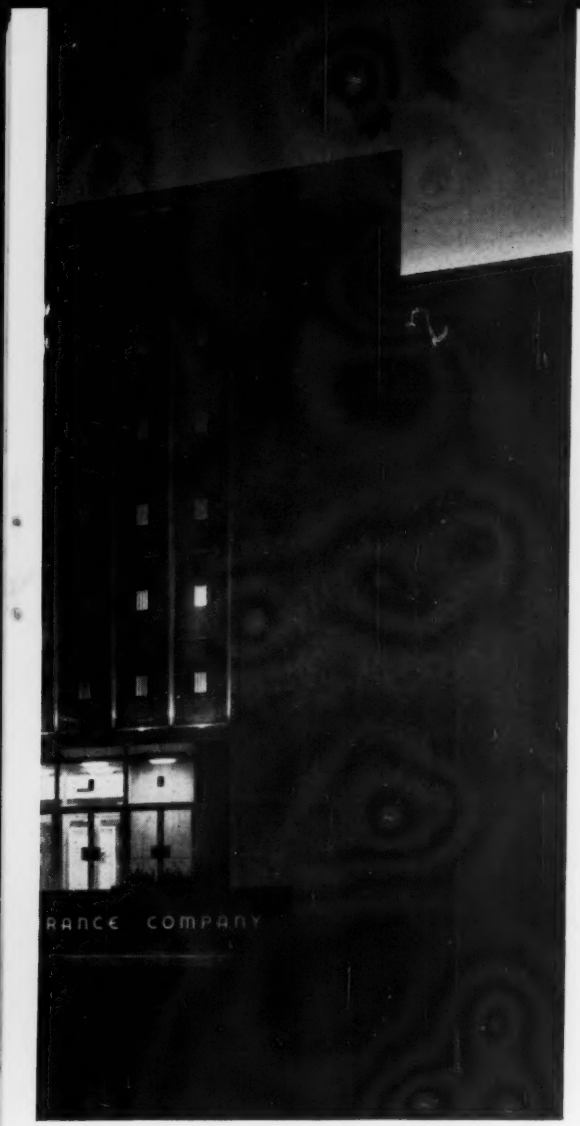
110 footcandles of glare-free illumination are maintained throughout, including this attractive lounge for employes.



How Old American Insurance Co. ended the great lighting search with Day-Brite

True to Missouri tradition, Old American Insurance Co. adopted a "Show Me" attitude when considering lighting for their new Kansas City headquarters.

They contacted their local power and light company engineers. Consulted the experts at General Electric's famed Nela Park. Even made their Addressograph Department a "lighting laboratory" and installed competitive fixtures side-by-side.

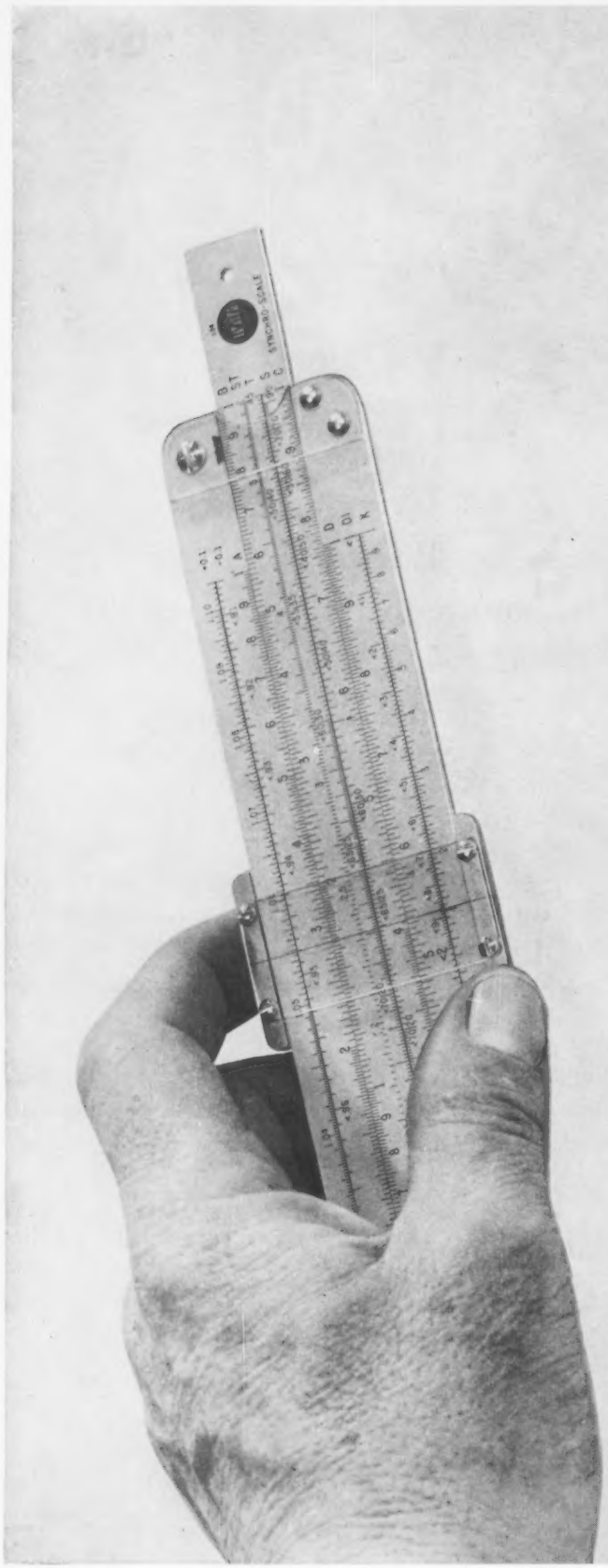
Result? For lighting effectiveness with high visual comfort, over-all economy with trouble-free maintenance, and pleasing appearance, Day-Brite lighting was the clear-cut choice.

May we show *you*? Call your Day-Brite representative, listed in the Yellow Pages, for the FACTS and FIXTURES! *Day-Brite Lighting, Inc., St. Louis, Mo. and Santa Clara, Calif. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ont.*

Modular design, incorporating Day-Brite Mobilex® with Cleartex® enclosures, permits complete flexibility in arranging offices and work areas.

DAY-BRITE

NATION'S LARGEST MANUFACTURER OF
COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT



When you must be right...

. . . look to the unfailing dependability of lath and plaster construction . . . for design flexibility that expresses an architect's ideas exactly as he wants them . . . for all-around construction economy that conforms to the owner's budget . . . for final quality measured in terms of acoustical values, fireproofing and lasting durability.

There is a lath and plaster system that will meet the most exacting demand. Ask the man from your local Lath and Plaster Bureau or write to:

NATIONAL BUREAU FOR LATHING AND PLASTERING, INC.
311 Tower Building,
1401 K St. N.W., Washington 5, D.C.

HOSPITAL PATIENT ROOM DOOR CONTROL HARDWARE

now in
GJ *clinically clean*
STAINLESS STEEL

GJ 320 series concealed OVERHEAD FRICTION TYPE DOOR HOLDER. Door may be set at any degree of opening up to 110°, for ventilation or privacy. Door cannot slam shut. All exposed parts of stainless steel with extruded bronze channel.
◀ GJ KH 1
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COMBINATION HAND AND ARM PULLS. Convenient for opening door from either side with sterile hands or when carrying loaded trays.
GJ 32—GJ 33
ROLLER LATCHES. Eliminate disturbing latch "click". Replaceable rubber roller silently engages dirt-free strike. Latching pressure adjustable.
. . . and RUBBER PNEUMATIC DOOR SILENCERS
GJ 64 for metal frames
GJ 65 for wood frames

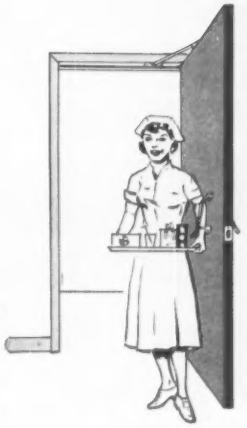
Made to GJ high standards of quality.

Non-porous, unusually strong and durable.

Will not tarnish, corrode or rust.

Your specification means more when you write in **". . . shall be GJ"**

PUTS THE STAFF IN SILENT CONTROL . . .



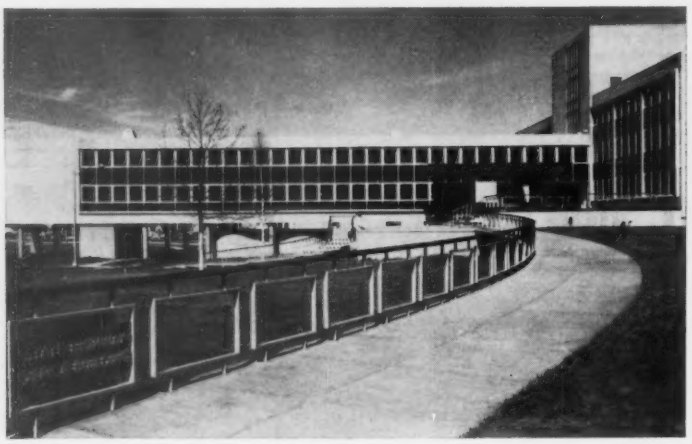
GLYNN·JOHNSON CORPORATION
4422 north ravenswood ave. • chicago 40, ill.

PENNVERNON® GRAYLITE™ glare-reducing for workers in new Connecticut State

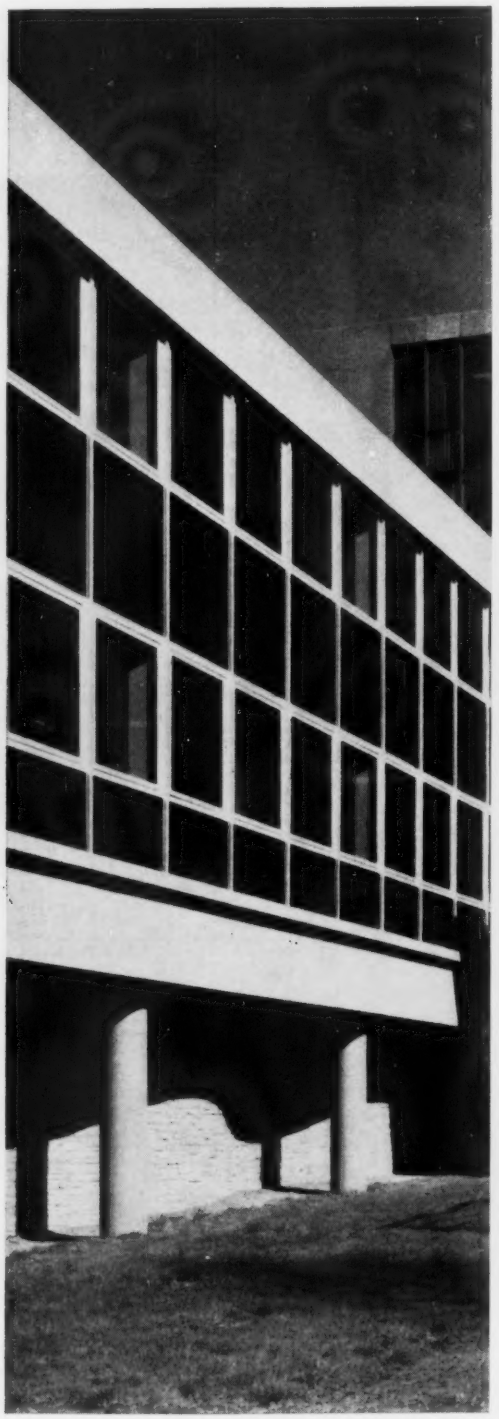
PENNVERNON GRAYLITE takes the glare out of sunlight, yet lets plenty of refreshing light come through the windows of the new Connecticut State Highway Department Building, Weathersfield, Connecticut. All elevations are glazed with PENNVERNON GRAYLITE "56"—PPG's neutral gray, glare-reducing heavy sheet glass. Its neutral gray tint doesn't change the hue of outdoor colors, doesn't limit your choice of interior colors.

GRAYLITE has an unusually brilliant, unmarred fire finish —both sides. Because it is drawn under careful control, wave and distortion are negligible.

Talk over the distinct advantages of PENNVERNON GRAYLITE sheet glass with your PPG Architectural Representative, or see Sweet's *7a/Pi.*



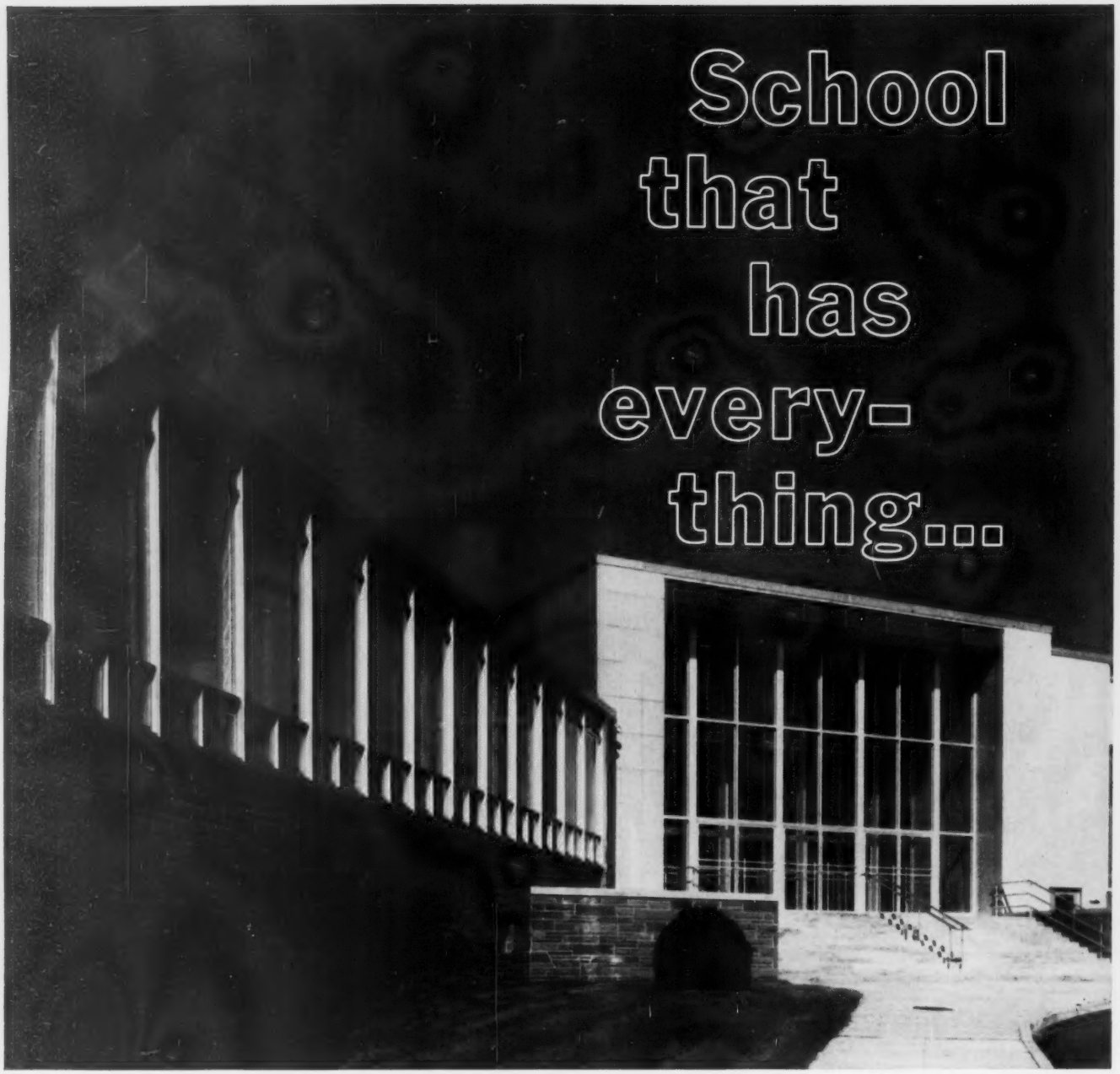
Architect: Henry F. Lugorf, A.I.A., Hartford, Conn.
Contractor: Felix Buzzi & Son, Inc., Torrington, Conn.
PPG Products installed: PENNVERNON GRAYLITE "56", Polished Plate Glass, HERCULITE® heat-tempered Glass Doors and Sidelites, TWINDOW® insulating glass units, and Mirrors



Pittsburgh Plate Glass Company

Paints • Glass • Chemicals • Fiber Glass
In Canada: Canadian Pittsburgh Industries Limited

glass . . . a shade easier on the eyes
Highway office building



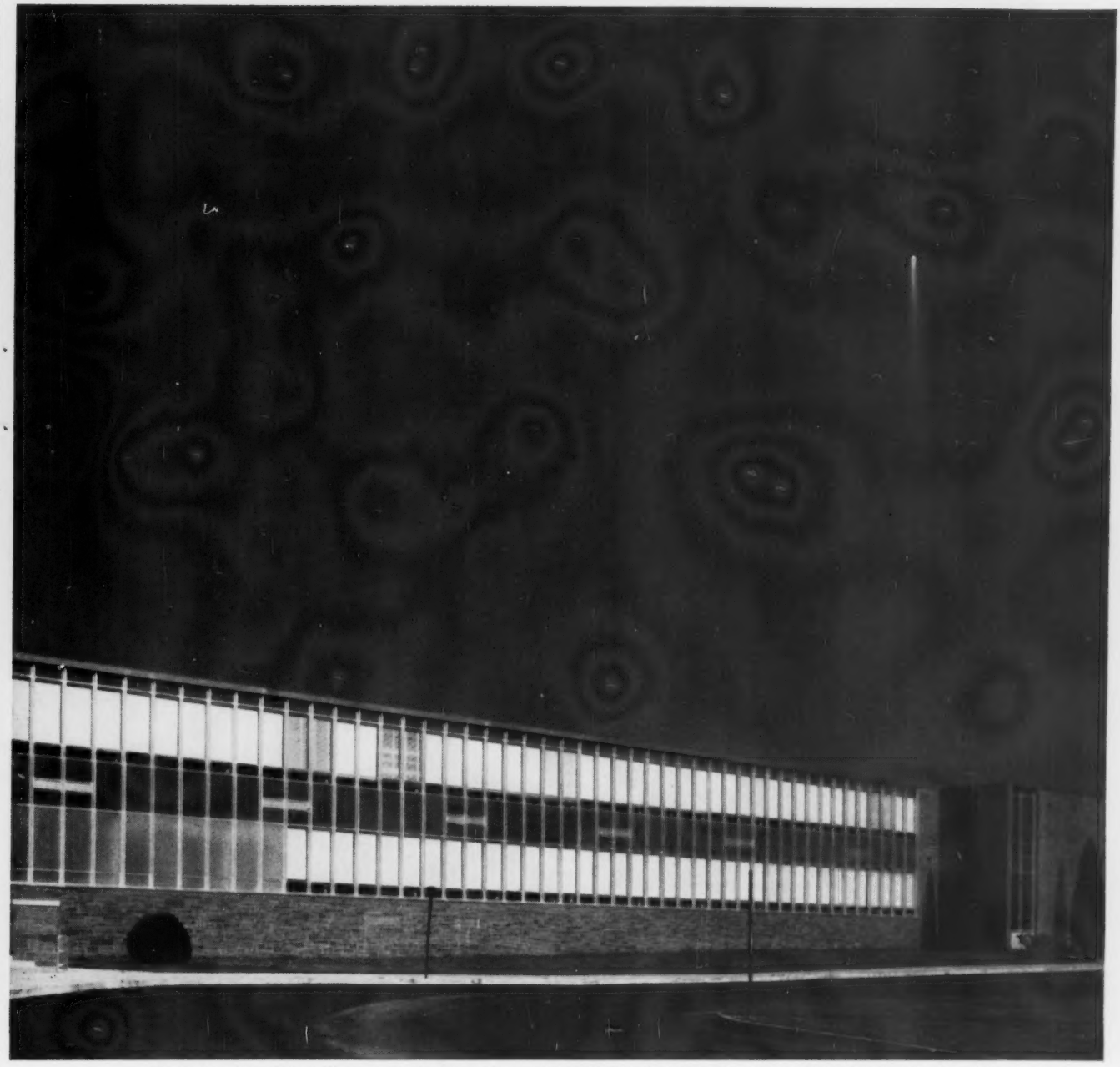
...has LUPTON Aluminum Windows

Modern facilities and modern architecture go hand in hand at Cheltenham High School. This beautiful structure houses such advanced features as an Olympic-size swimming pool, sound-proof music rooms and foreign language booths. It was built with 1,434 units of LUPTON Type "H" and 122 units of LUPTON Type "G" aluminum curtain wall, plus 87 LUPTON "Master" projected windows.

You can design creatively with LUPTON . . . vary sizes and locations of glazed and non-glazed areas as well as types of fenestration; material, color, and texture of opaque areas. Selection of mullion profiles and spandrel panels is another design advantage.

LUPTON construction is also simple and economical. Standardized tooling and fabrication operations, and the lightness of LUPTON's slim, durable aluminum parts make installation fast and easy. You save floor space . . . save maintenance . . . save foundation and framework costs.

Most advantageous of all, though, is LUPTON's dependability. As proven in hundreds of jobs—including one of the largest curtain-wall installations in the world—Two Broadway,



Cheltenham High School, Wyncote, Pa. Architects: Heacock & Platt, Philadelphia, Pa. Contractor: Baton Construction Co., Philadelphia, Pa.

and Curtain Walls

New York City—you can depend on LUPTON to meet your specifications, to deliver as scheduled. You can pinpoint responsibility, because LUPTON can do the whole job—even install!

See SWEET's (Sections 3 and 17) for the Michael Flynn Aluminum Curtain Wall and Window catalogs, and write for further specific information. Inquire about LUPTON Comfort-Conditioning*—the new curtain-wall system that cools, heats, and ventilates. A call to the nearest LUPTON representative (see the Yellow Pages under "Windows—Metal") will bring fast action without obligation. (**Trade Mark*)

LUPTON®

METAL WINDOWS • CURTAIN WALLS

MICHAEL FLYNN MANUFACTURING CO.

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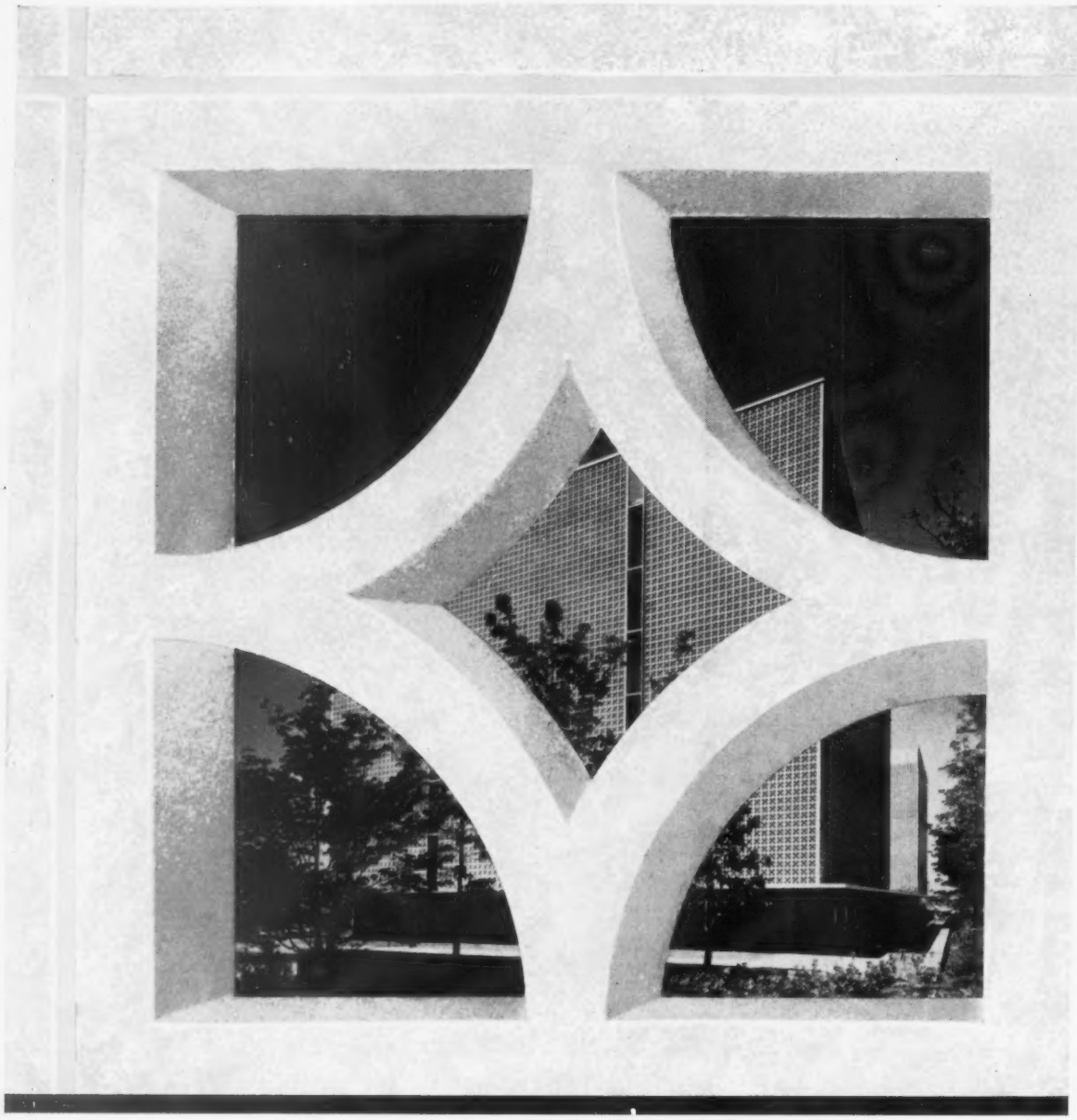
WEST COAST OFFICE AND PLANT: CITY OF INDUSTRY, CALIF.
SALES OFFICES: STOCKTON, CALIF.; CHICAGO, ILL.; NEW YORK, N. Y.; CINCINNATI, OHIO; CLEVELAND, OHIO; DALLAS, TEXAS.



Specifications for the Finest Solar Screens

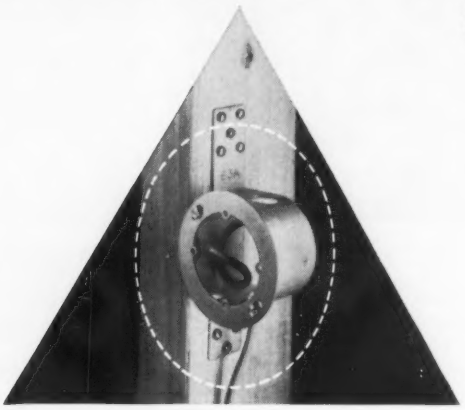
The first choice of leading architects in specifying units for today's modern solar screens, split block or decorative concrete block construction is MEDUSA WHITE, the original WHITE PORTLAND CEMENT with the diamond blue white color. And to set up these beautiful units, architects specify MEDUSA STONESET WHITE MASONRY CEMENT—the only prepared non-staining white masonry cement with a Portland Cement base. Used white or tinted for the ultimate in unit and mortar beauty, they make an exciting precast concrete construction. Specify both of these Medusa White Cements to achieve outstanding concrete masonry construction. Write for detailed information.

OVER 65 YEARS OF CONCRETE PROGRESS

MEDUSA PORTLAND CEMENT COMPANY

P. O. BOX 5668 • CLEVELAND 1, OHIO

For details of home installations, see Sweet's Light Construction File, 11c/Be.

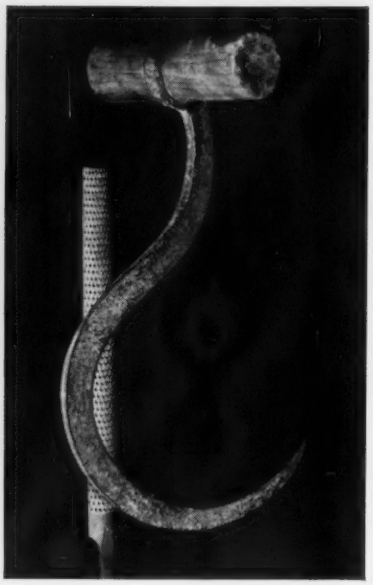


MODERN LIVING *requires modern telephone facilities. You make them possible – and preserve the interiors of the homes you design – when you specify built-in telephone outlets with wiring concealed.*

Bell Telephone System

ENJAY BUTYL

IS TOPS IN ALL-'ROUND



RESISTANCE TO CHEMICALS

Enjay Butyl, because of its unique and extremely low degree of unsaturation, offers excellent resistance to corrosive chemicals. The preferred rubber for tank linings, hose, seals, gaskets and other applications where exacting chemical resistance is required.

VIVID COLORS

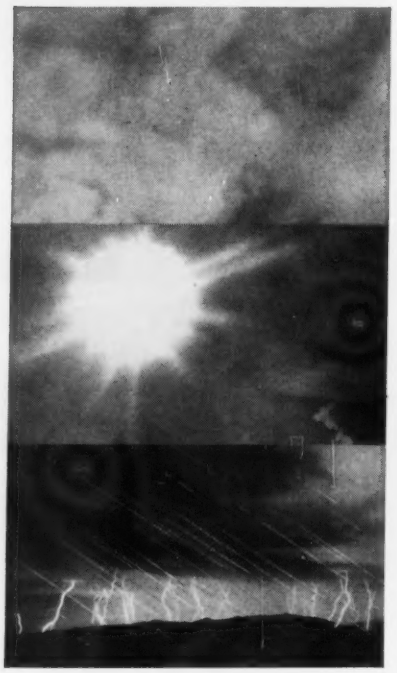
Enjay Butyl requires no additives for quality coloring over a wide range of hues. Famous for colorability and smooth finishes, Butyl has been successfully plastic coated for special applications.

RESISTANCE TO TEAR AND ABRASION

Enjay Butyl offers the highest aged tear strength of any rubber . . . even after long exposure to ozone and heat! Its inherent toughness resists abrasive wear, in such applications as tires, conveyer belts, hose and other mechanical goods.

RESISTANCE TO SUN-LIGHT AND WEATHERING

Enjay Butyl has proven its resistance to ultra-violet light, ozone, oxidation, moisture and mildew. Increases life of products such as weatherstrips, garden hose, wading pools and automotive parts.



RUBBER

PERFORMANCE

DAMPING PROPERTIES

Enjay Butyl absorbs shock and vibrational energy more completely than any other rubber. Resiliency can be varied in compounding and processing. Butyl is ideal for axle and body bumpers, motor mounts and sound-deadening applications.

IMPERMEABILITY TO GASES AND MOISTURE

Enjay Butyl is tops in impermeability to gases and moisture . . . retains air pressure 8 times better than natural rubber. Outperforms other rubbers in such application as inner tubes, jar and bottle seals, hoses and inflatable goods.

ELECTRICAL RESISTANCE

Enjay Butyl tops all vulcanizable rubbers in electrical and dielectric properties . . . in resistance to corona and ozone breakdown and water absorption. Its high dielectric strength insures against electric breakdown under normal or surge voltage. Its heat resistance permits higher current flow for a given conductor size.

The outstanding properties of Butyl Rubber create new horizons for the designer, and offer to manufacturers an opportunity to utilize the qualities of rubber in applications never before possible. The unique properties of Butyl have led to vast improvement in many existing products. Technical skills will open the way to countless new uses.

Butyl is the "idea" rubber with uses stretching as far as the imagination can reach. We'll be glad to tell you all about it. Just contact the nearest Enjay office.

EXCITING NEW PRODUCTS THROUGH PETRO-CHEMISTRY

ENJAY CHEMICAL COMPANY

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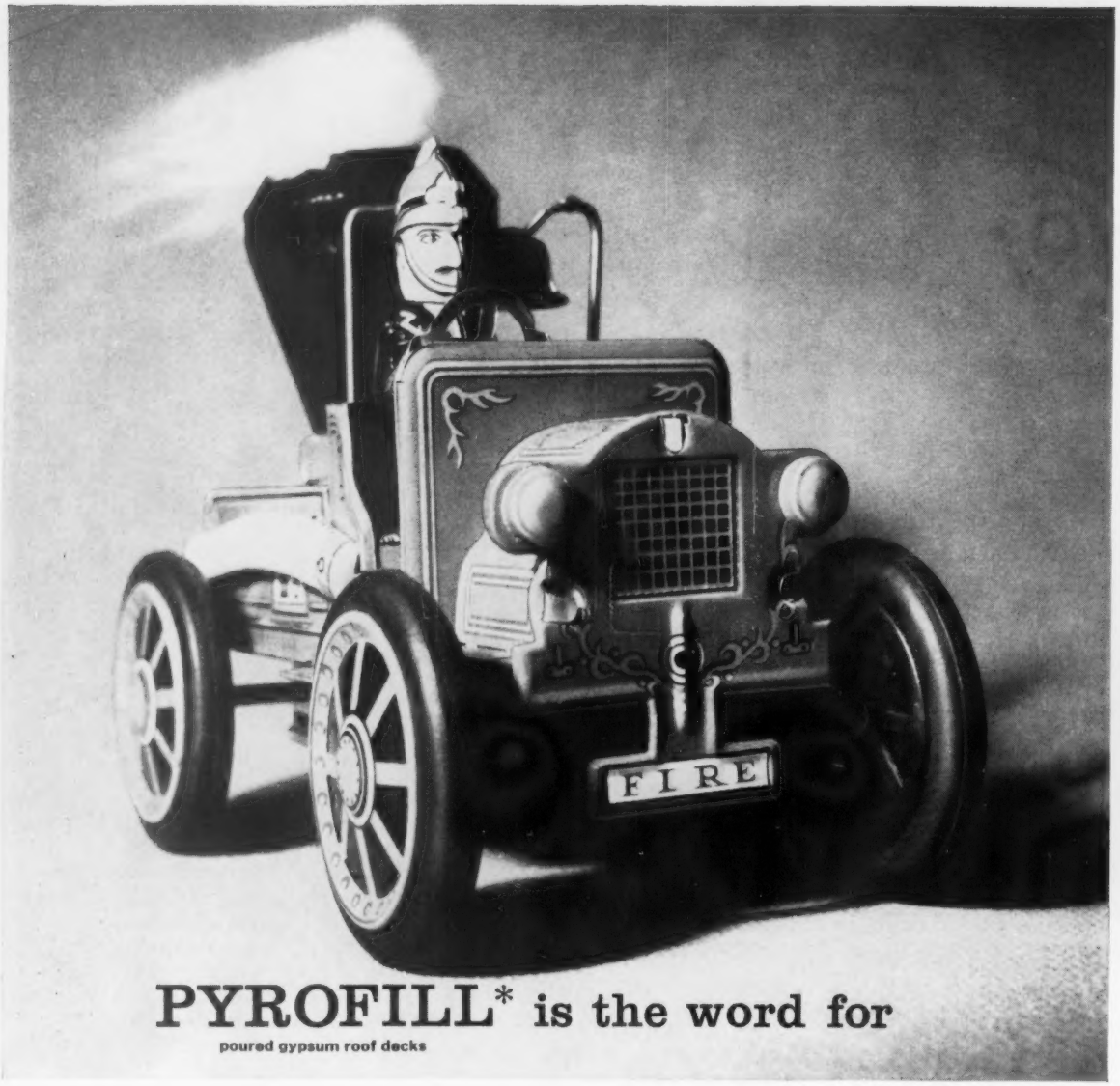
HOME OFFICE: 15 West 51st Street, New York 19, N. Y. OTHER OFFICES: Akron • Boston • Charlotte • Chicago • Detroit • Houston • Los Angeles • New Orleans • Tulsa

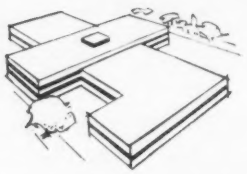
ENJAY® BUTYL



PYROFILL* is the word for

poured gypsum roof decks

PROTECTION



A PYROFILL Roof Deck can offer far more than a simple "incombustible" rating. It can provide test-proven one-hour and two-hour fire endurance . . . maintain dimensional integrity without flame spread through buckled, shrunken, or warped panels . . . resist structural failure by sound attachment and continuous reinforcement . . . fight fire temperature transfer with low conductivity and inherent fire resistance . . . supply all this protection using standard construction at competitive cost.

See Sweets file 2d/Un, or contact your U.S.G. Industrial Sales Engineer or Architect Service Representative.

*T.M. Reg. U.S. Pat. Off.

Responsibility for expert application of PYROFILL Gypsum Concrete is centered in a single U.S.G.-approved contractor—a roof deck specialist who is skilled and experienced in all phases of poured gypsum construction.

UNITED STATES GYPSUM

the greatest name in building

National Bank of Detroit
Albert Kahn Associated Architects & Engineers, Inc.
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Impressively modern...

and served by HAUGHTON OPERATORLESS ELEVATORS

. . . new concept in elevatoring inspired by *Elevonics**

A dramatic combination of architectural beauty and functional design, the new National Bank of Detroit has the most advanced system of electronically controlled elevators, keyed to the age of automation!

Seventeen Haughton Operatorless Elevators speed traffic from floor-to-floor, in regal comfort, and with uncanny speed and smoothness. They are motivated by an amazing "electronic brain" that anticipates service needs at every moment, and dispatches cars at proper times and in proper sequence to meet traffic needs *exactly*!

Such is the magic of Haughton Elevonics*, key to new advancements in elevator technology . . . and new standards of elevator performance, economy and comfort for multi-floor buildings of all types.

We are proud that Haughton Elevators have a part in maintaining the functional integrity of the new National Bank of Detroit. Their complete reliability is thoroughly recognized by building professionals. We will be glad to furnish you with complete information on Haughton design, modernization and maintenance capabilities.

**Haughton's advanced program in elevator systems research and engineering, with specific emphasis on the creative application of electronic devices and instrumentation for betterment of systems design and performance.*

EMBLEM OF EXCELLENCE IN VERTICAL TRANSPORTATION

HAUGHTON
ELEVATOR COMPANY

DIVISION OF TOLEDO SCALE CORPORATION
Executive Offices and Plant • Toledo 9, Ohio

FACTORY BRANCHES TO SERVE YOU COAST TO COAST

LAMINATED WOOD ARCHES

"Fundamental to Concept of Church"

"These arches are of fundamental importance to the concept of this church in addition to their structural function," state the architects. "The design was unusual since the roof ridge rose substantially above the peak of the arches. This undoubtedly caused special problems in fabrication which were well handled . . . workmanship was of the highest order and contributed materially to the total design success."

Rilco laminated wood structural members offer unlimited design possibilities. They are custom fabricated to exact specifications and shipped to job site on time for fast erection by regular crews. All members are carefully processed for lasting beauty—add warmth and character to church, residential, school, commercial or industrial buildings. Our service engineers will be happy to consult with you, without obligation.

Write for free church construction catalog.

The Church of the Redeemer, Baltimore, Maryland. Architect: Pietro Belluschi, F.A.I.A., Cambridge, Mass., and Associated Architects: Rogers, Taliaferro & Lamb, Baltimore. Construction features Rilco laminated wood arches up to 56' 11¾" in span, spaced 13' 9" o. c.

RILCO

works wonders with wood

RILCO LAMINATED PRODUCTS

W817 First National Bank Building
St. Paul 1, Minnesota
DISTRICT OFFICES: TACOMA, WASHINGTON;
FORT WAYNE, INDIANA; NEWARK, NEW JERSEY

URBAN RENEWAL

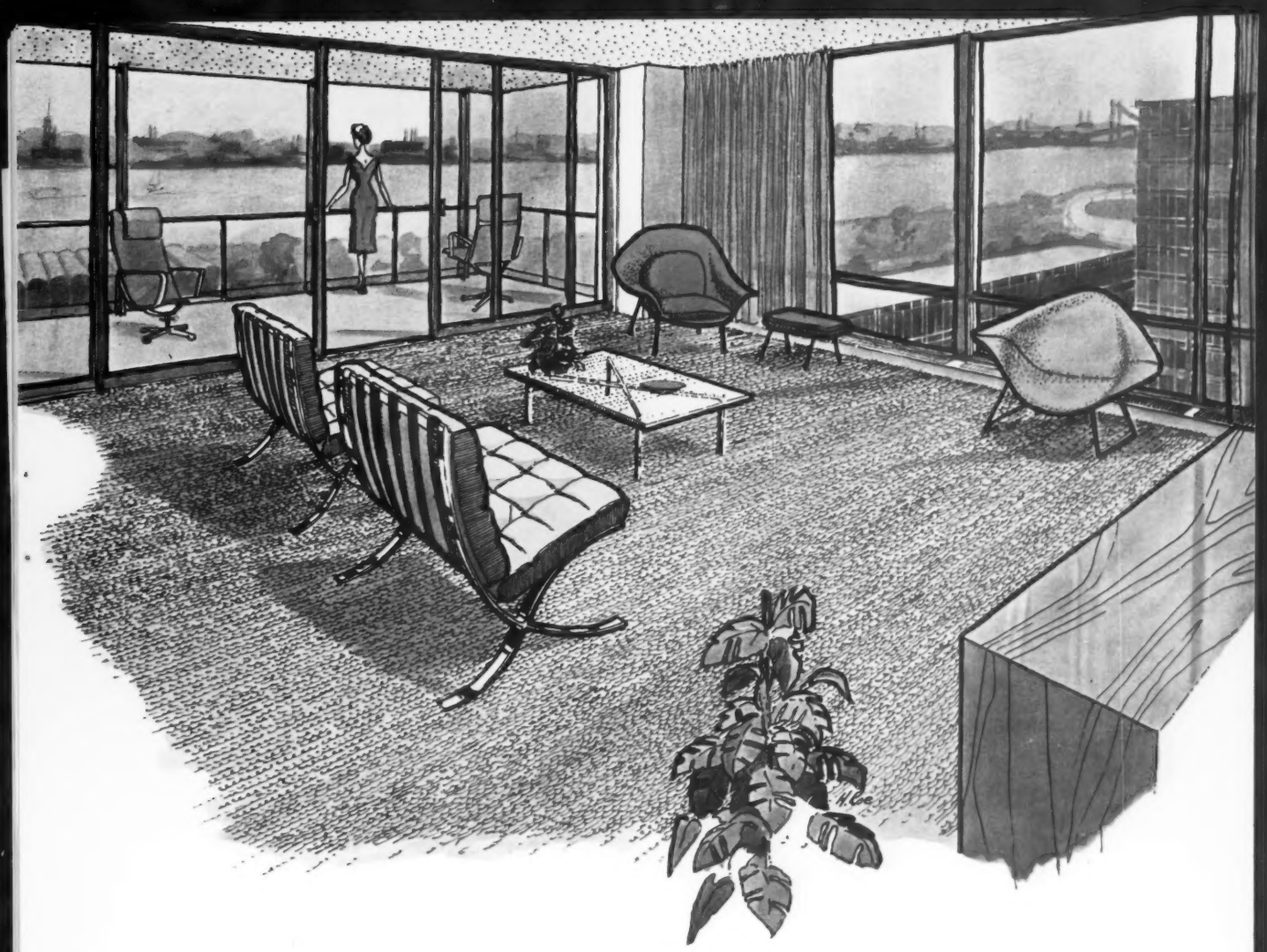
BUILDINGS TO BE TORN DOWN in this area have been removed in the rendering above. In their place are high-rise and garden apartment buildings overlooking the Maumee River, Toledo's "Key to the Sea." Good structures in the area will remain and likely be improved.

Renderings by Harold Roe of Bellman Gillett & Richards

Toledo master plan may reverse the trend to suburbia

a report by LOF GLASS

CURTAIN WALLS are designed with *Thermopane*® insulating glass in all window areas for year-round air-conditioning economies. *Parallel-O-Grey*® plate glass may be used to reduce solar heat and glare. Spandrels of *Vitrolux*®, a heat-strengthened plate glass with color fused to the back, lower exterior building maintenance.



WINDOW WALLS will create a feeling of freedom and spaciousness. *Thermopane* used in windows and sliding glass doors will modify heat gain and heat loss—provide comfort by reducing drafts near windows—muffle outside noise. *Tuf-flex®* tempered plate glass in balcony railings permits unobstructed view of city from living room.

"Never in the long history of our profession have planners and architects faced such awesome responsibilities and unprecedented opportunities," says John Noble Richards, FAIA and immediate Past President of AIA.

"Before this century is out, we shall have to build the equivalent of another United States, and then some. We have the opportunity to turn our cities from a turbulent sea of ugliness into an efficient, harmonious, livable and beautiful environment. When social and cultural values are renewed, you'll see reversal of the trend to suburbia."

And that is exactly what Toledo, Ohio, is hoping to do. Through cooperation of civic and professional groups* and City Council, a master plan has been developed. Land use is being studied. Property is being appraised.

Part of the master plan calls for clearing an area adjacent to the downtown business district and the Maumee River of decrepit 70 to 100-year-old buildings, and to replace them with modern high-rise and garden apartments that will attract high and middle-income executives and their families. The project has already been given a name—Vistula Meadows. (Toledo was formed in 1833 by merger of Vistula and Port Lawrence villages.)

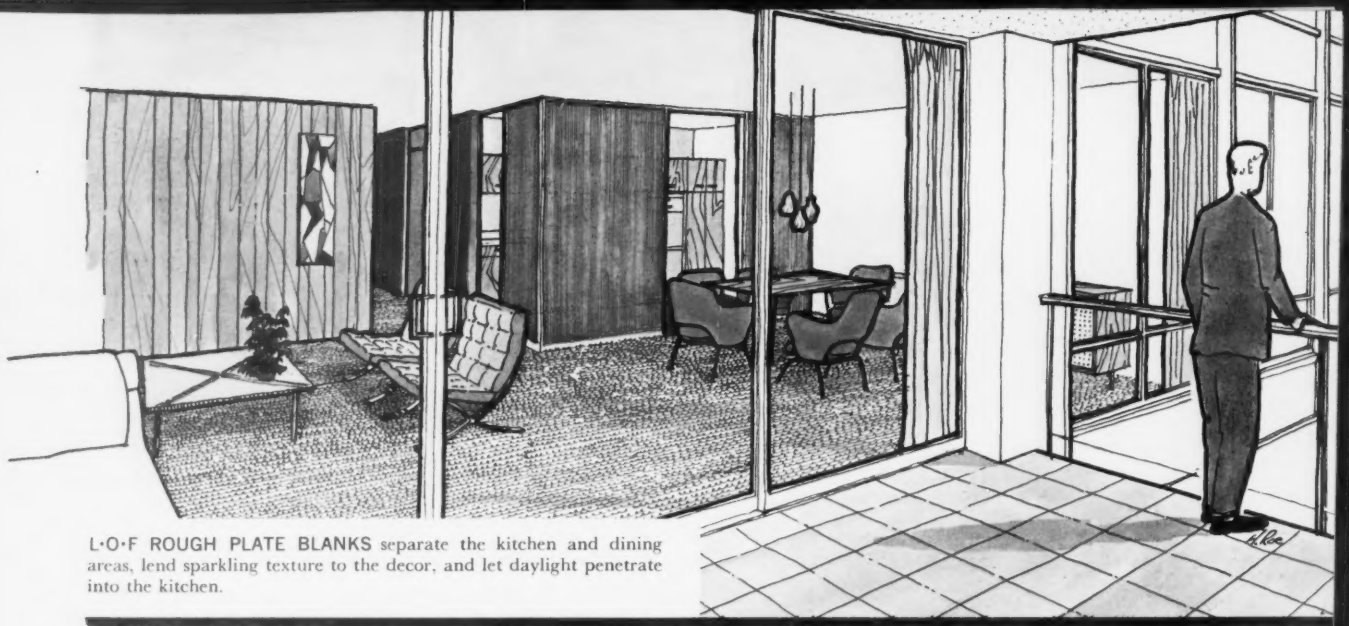
Can people be lured back from booming suburbia? Many of Toledo's planners think so—if the apartment buildings are designed right. L·O·F commissioned Bellman Gillett & Richards of Toledo to further develop this phase of the master plan.

Mr. Orville Bauer, the architect's project design chief, reasons like this: "Many busy executives are tired of commuting; they want to live near their work, and will, if we provide them with bright, cheerful surroundings . . . and privacy without any feeling of confinement."

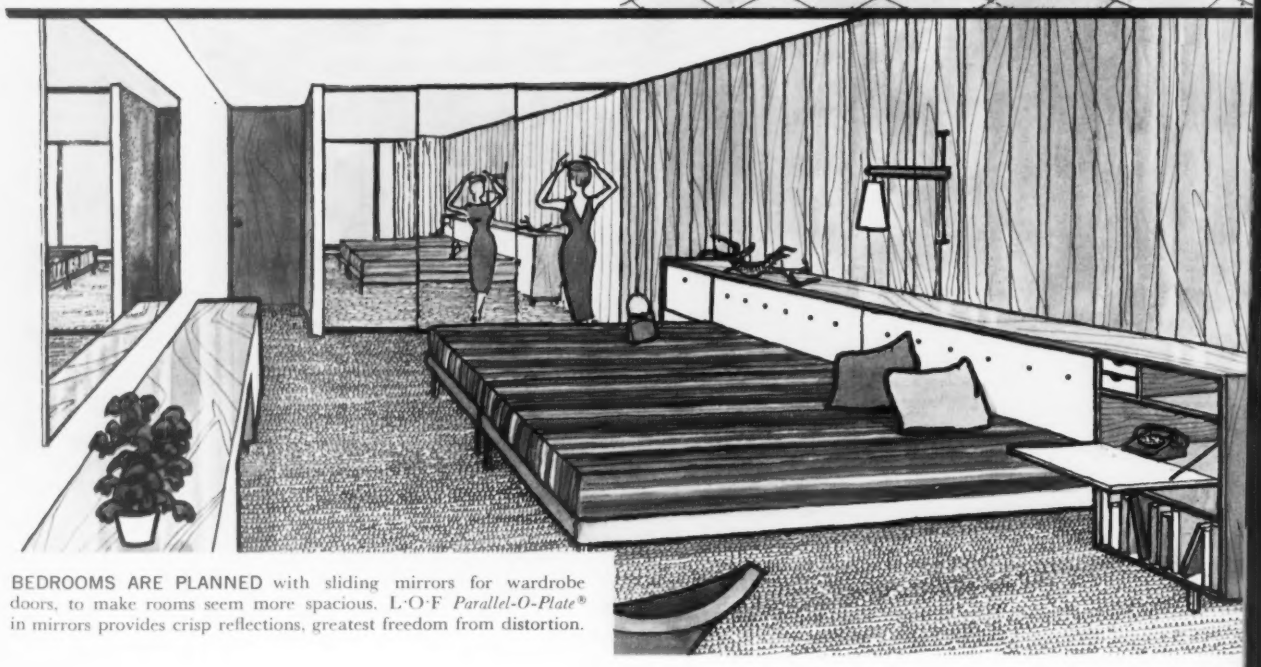
The buildings envisioned for Vistula Meadows consist of high-rise (16-story) and garden-type (2-story) apartments oriented on the site so that tenants on the first floor of the taller buildings have an unobstructed view over the roofs of the lower structures.

Buildings are designed for economical curtain-wall construction with insulating glass window walls and colorful

*See back page



L·O·F ROUGH PLATE BLANKS separate the kitchen and dining areas, lend sparkling texture to the decor, and let daylight penetrate into the kitchen.



BEDROOMS ARE PLANNED with sliding mirrors for wardrobe doors, to make rooms seem more spacious. L·O·F *Parallel-O-Plate*® in mirrors provides crisp reflections, greatest freedom from distortion.

plate glass spandrels. The high-rise buildings are planned with four two-bedroom suites to a floor, each with a balcony located for complete privacy.

Mr. Lawrence F. Murray, Director of the Toledo-Lucas County Planning Commission, feels that Vistula Meadows will have a very important effect on the whole community as it expands from downtown to outlying areas, and should stimulate a wave of new growth in the city's central core.

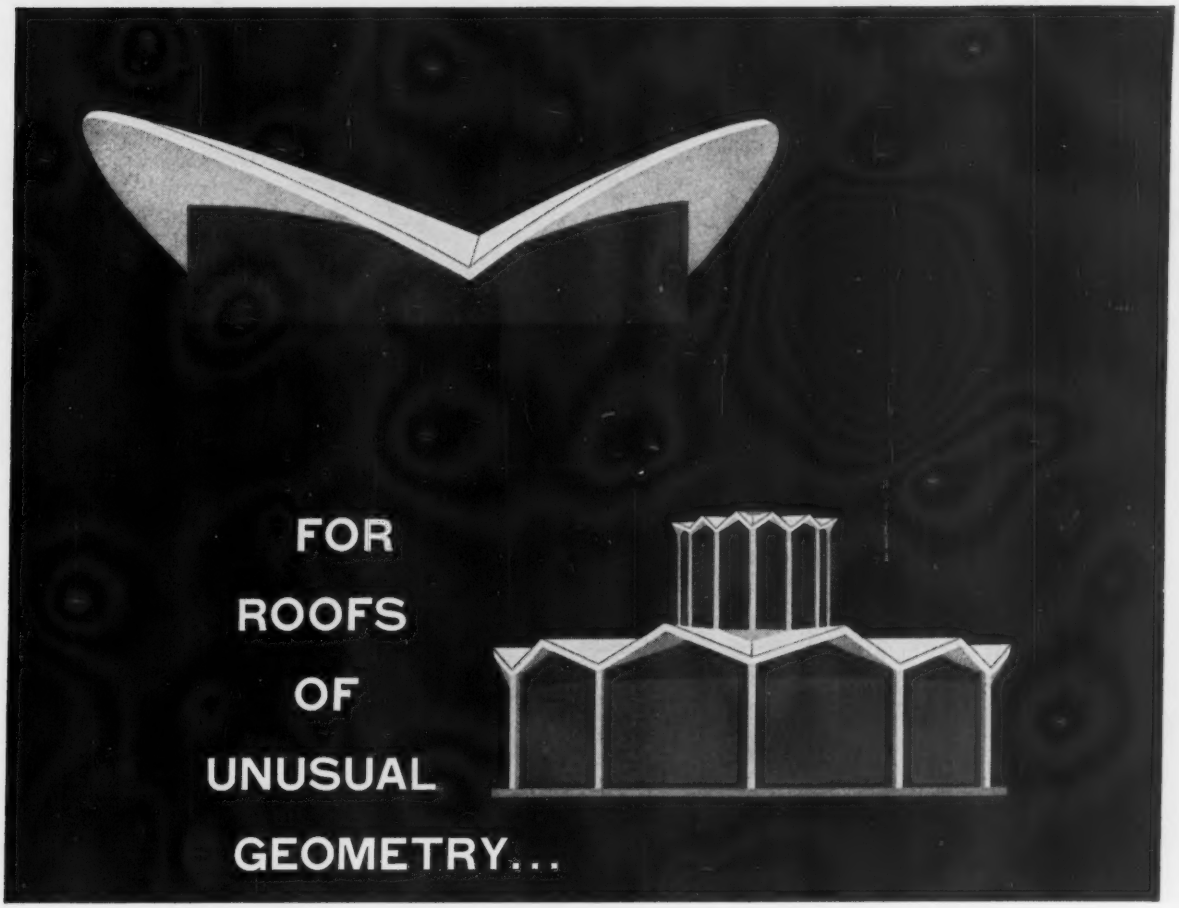
Credits for activation of Toledo's Redevelopment Program include:

Downtown Toledo Associates
Toledo Chapter of American Institute of Architects
Toledo City Council
Toledo-Lucas County Planning Commission
Toledo Urban Renewal Agency

L·O·F GLASS

For information on L·O·F products, refer to Sweet's Architectural File 26-A, or call your L·O·F Distributor or Dealer (listed under "Glass" in the Yellow Pages). Or write to Libbey·Owens·Ford, 811 Madison Ave., Toledo 1, Ohio.

LIBBEY·OWENS·FORD *a Great Name in Glass* **TOLEDO 1, OHIO**



Colorful Protective Coatings Based on HYPALON®

synthetic rubber

LONG-TERM PROTECTION. For roofs with varied shapes and pitches, HYPALON-based roof coatings have many advantages over other roofing materials. Most conventional roofing materials are hard, if not impossible, to adapt to steeply contoured roofs. And until the introduction of HYPALON-based roof coatings, departures from the conventional roofing materials too often led to continual repair, loss of protection and poor building appearance.

HYPALON-based coatings can be applied over all commonly used roof decks. HYPALON-based coatings cure into tough, elastic films, which permanently adhere to the roof deck. HYPALON coatings do not require plasticizers, which can migrate and cause local embrittlement. Inherently resilient, HYPALON coatings remain elastic; they stretch when the roof deck expands and recover when it contracts. And they neither soften in heat nor become brittle with cold.

HYPALON coatings have excellent resistance to sun, ozone, flame, abrasion and strong oxidizing chemicals. In addition, they have a very slow rate of film erosion.

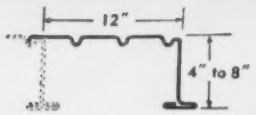
CHOICE OF COLOR. Architects may choose from a wide range of permanent colors—white, pastels and deep shades. This advantage permits color conditioning of the entire building. Too, the load on air conditioning equipment can be reduced by a reflective roof coating of white HYPALON.

MORE INFORMATION. Du Pont manufactures only the raw material, HYPALON, and not the coatings themselves. We will be happy to send you our new booklet on elastomeric roof coatings as well as a list of qualified suppliers. Application information, performance data and costs are available from these suppliers. Please write to E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Department PA-7, Wilmington 98, Delaware.

DU PONT
REG. U.S. PAT. OFF.

Better Things for Better Living . . . *through Chemistry*

HYPALON®
SYNTHETIC RUBBER



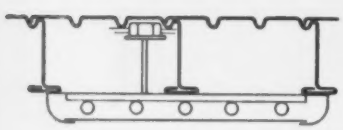
T-STEEL — New! Galvanized. For clear spans to 32'0". Adaptable to acoustical and flush, luminous ceiling treatments. Provides superior diaphragm to transmit seismic and wind loads.

Ceiling Treatments with T-Steel Deck

Standard Tile or Board

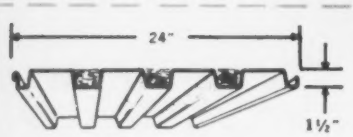
Corrugated Diffuser

Exposed (Underside painted for increased reflection)



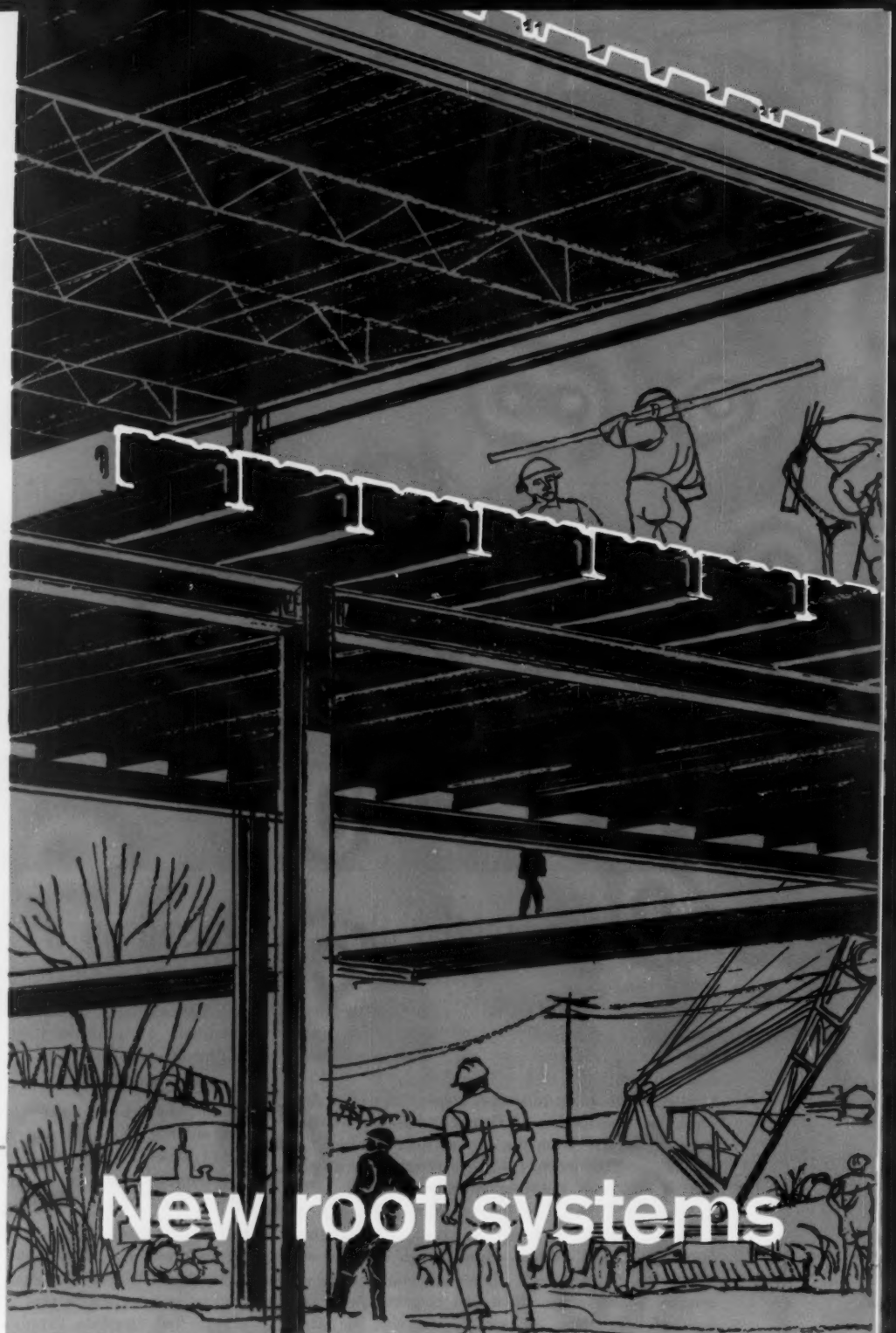
Surface-mounted Fixture

Lath-and-Plaster Fireproofing



TYPE B ACOUSTIDECK — For purlin spacings to 10'. Uses minimum of 1" rigid insulation board.

TYPE C ACOUSTIDECK — For purlin spacings to 24'. Uses minimum of 1½" rigid insulation board.



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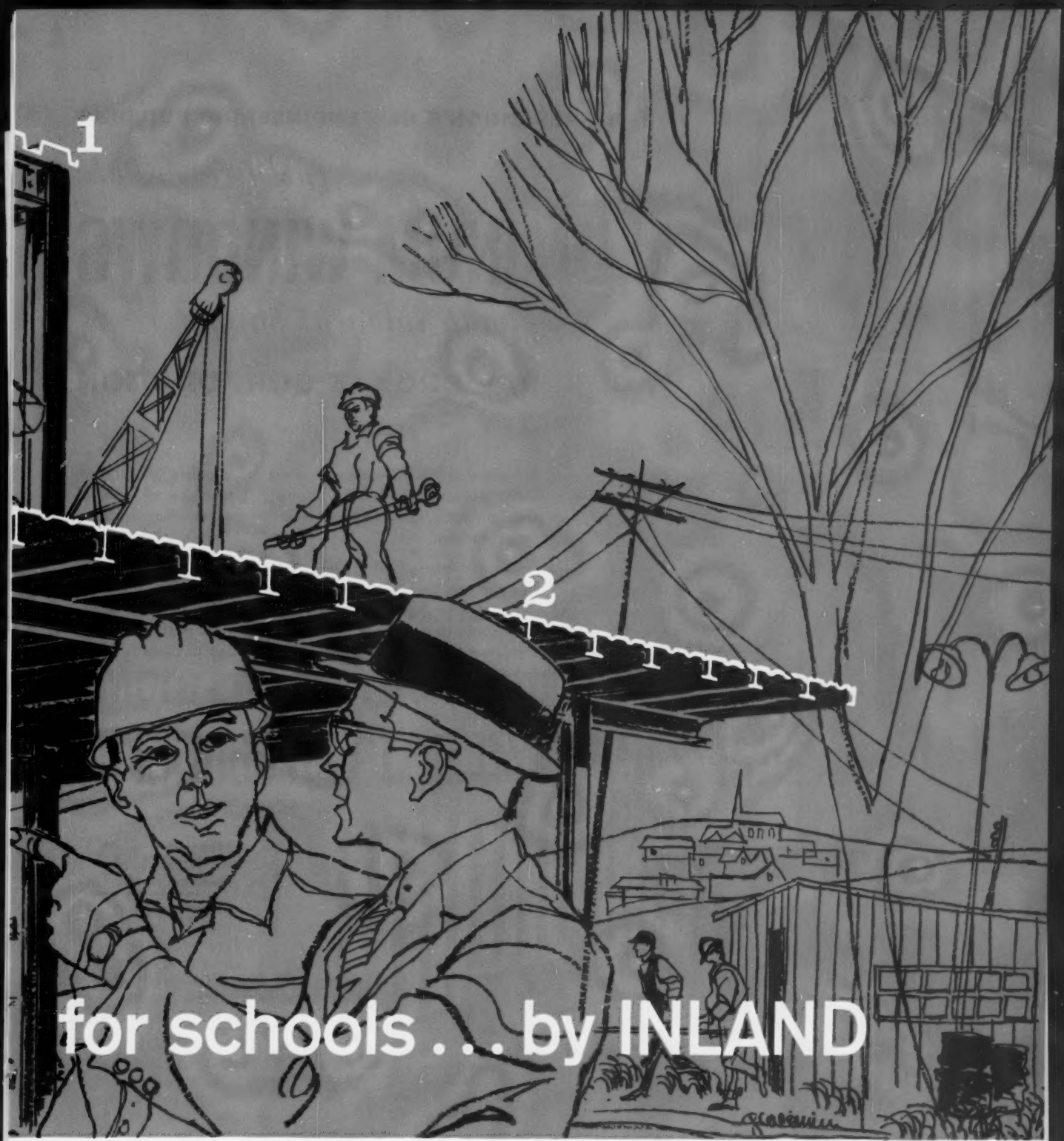

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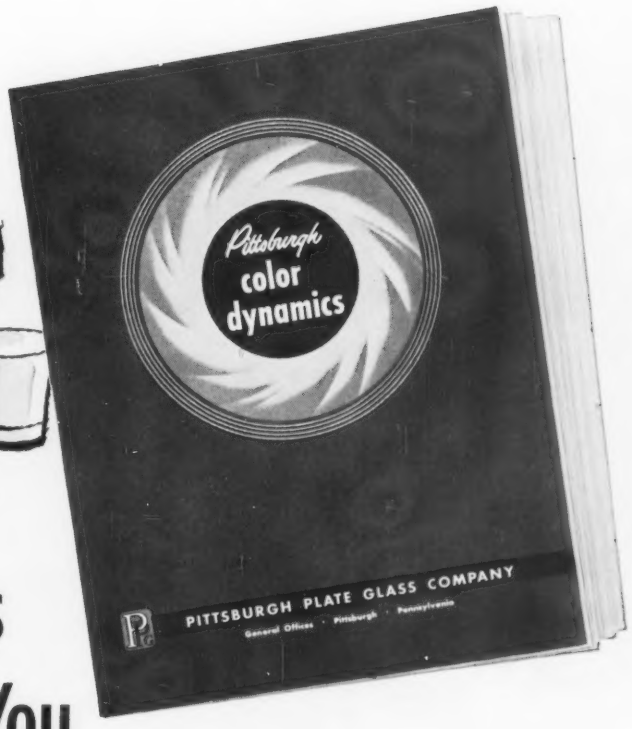

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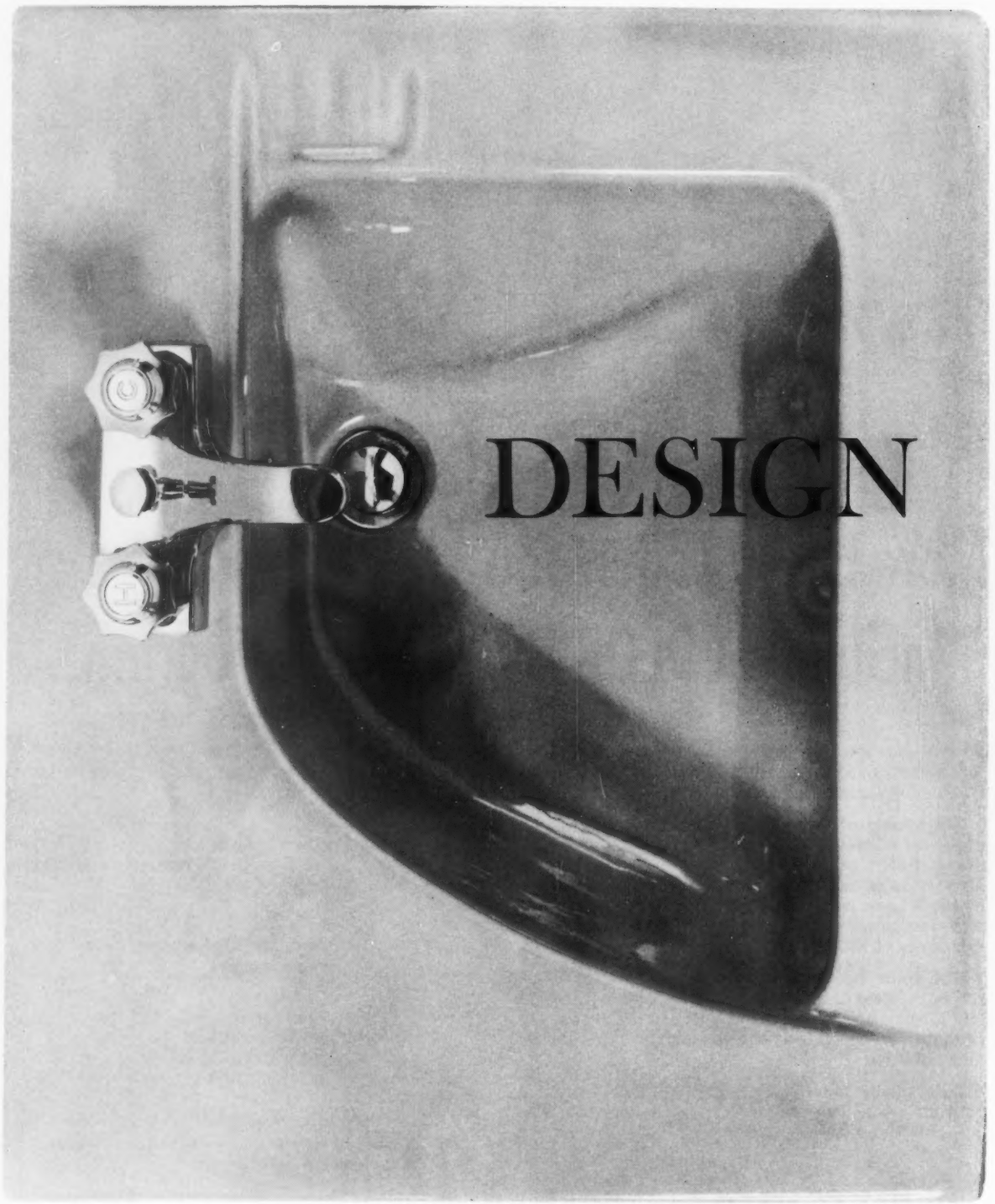

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(July, 1960)

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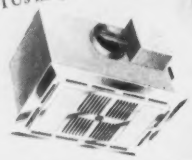

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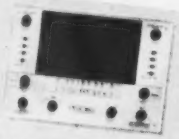

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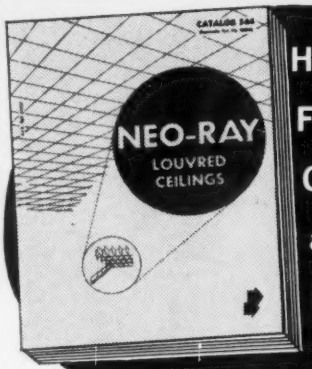

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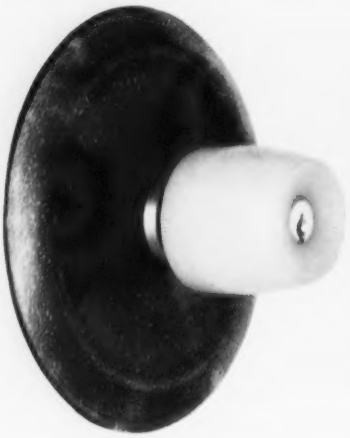

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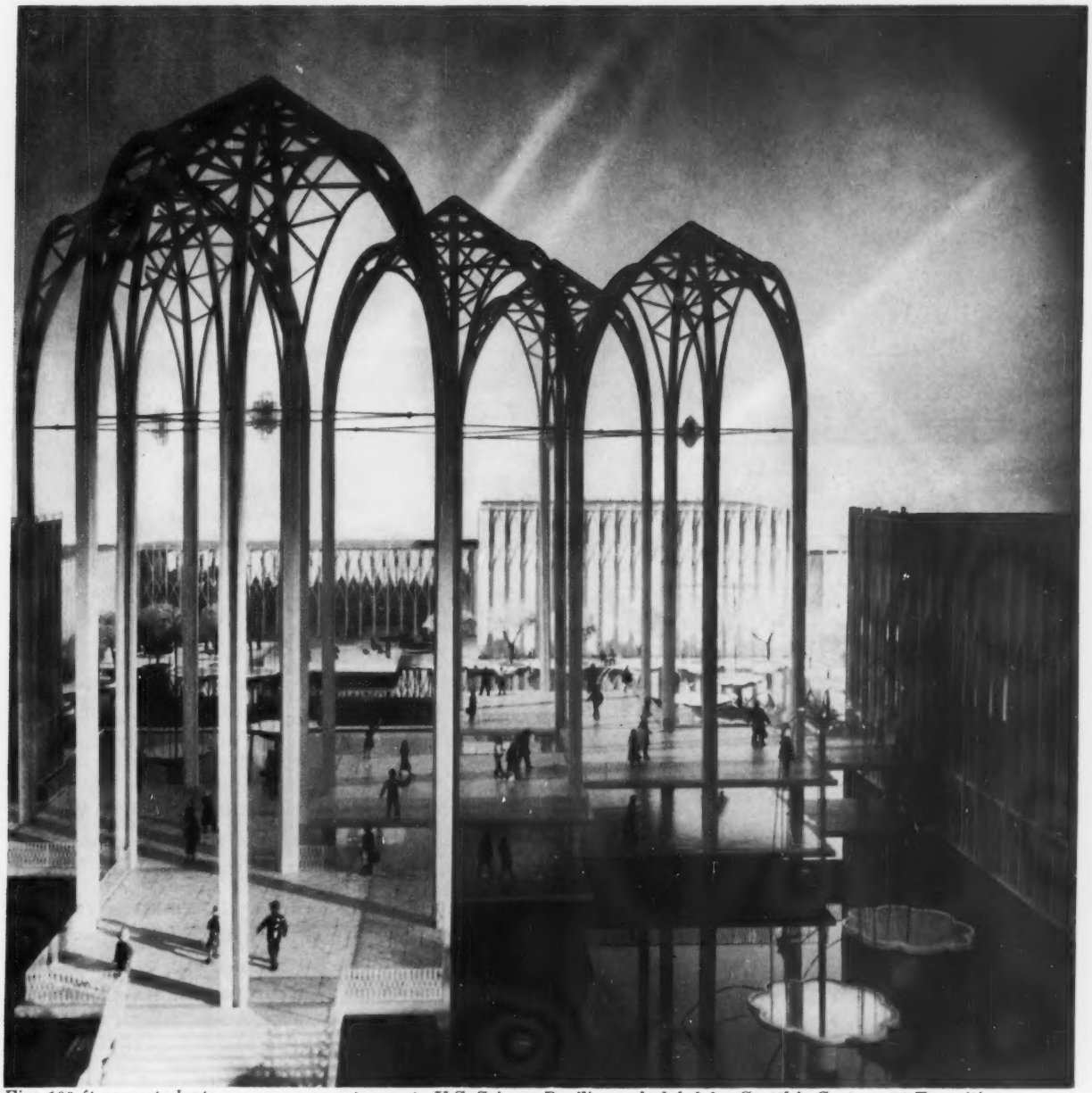

Five 100-ft concrete lanterns soar over entrance to U.S. Science Pavilion, scheduled for Seattle's Century 21 Exposition.

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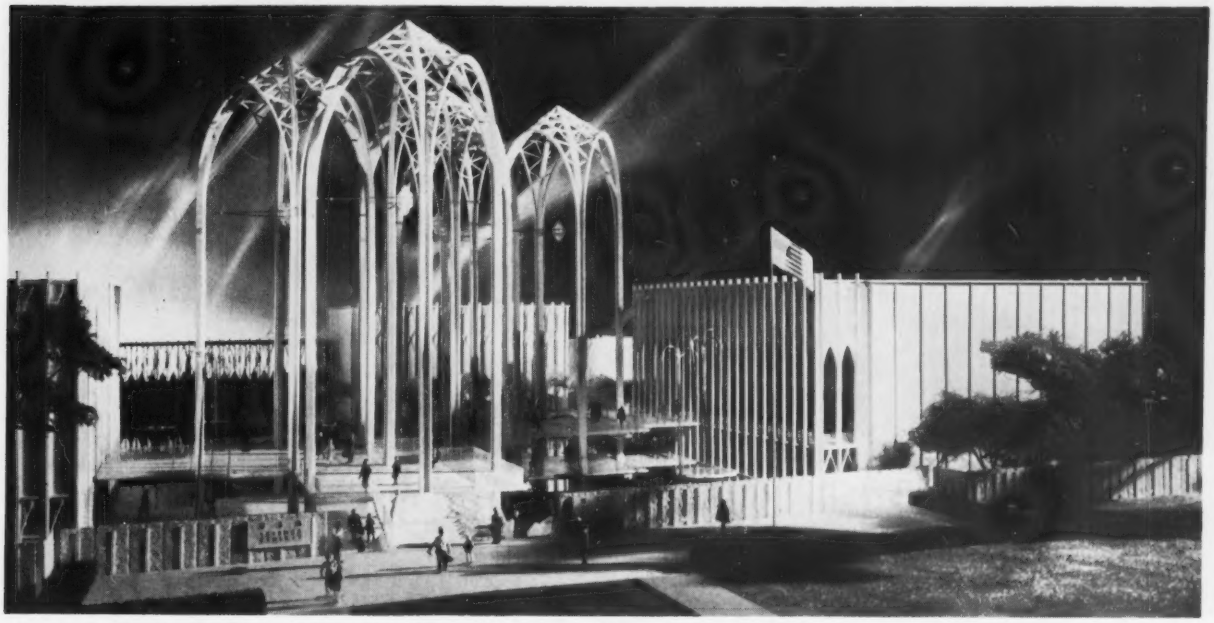


"Vertical Gothic" Pavilion Designed for Century 21

U. S. Science Building Will Set Fair's Theme

WASHINGTON, D. C. The model of the United States Science Pavilion Building scheduled for the Century 21 Exposition in Seattle, Washington, was recently unveiled in the lobby of the U. S. Department of Commerce here. Designed by Minoru Yamasaki & Associates, with Naramore, Bain, Brady & Johanson of Seattle associated, the project is expected to be one of the two "theme" buildings of the exposition (the other being Paul Thiry's Coliseum).

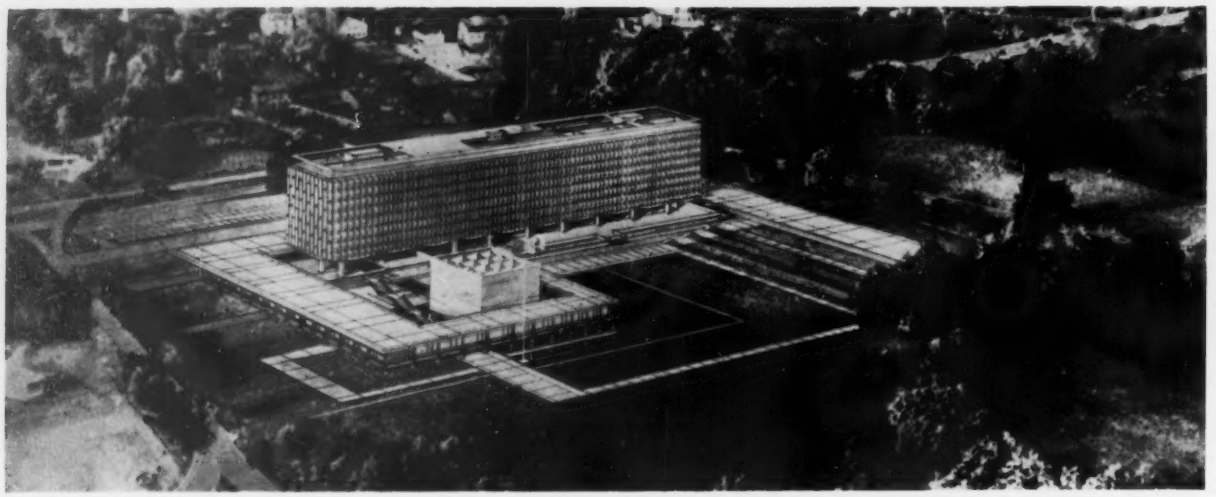
The pavilion—actually five connected buildings—will be approached over a bridge surmounted by five domes on 100-ft-high concrete columns. The domes will be studded with colored glass. Platforms over the courtyard pools will lead the visitor into the first building, whence he will follow a natural progression through the exhibits, to emerge at the other side of the pool. Exhibits will include a multiscreen theater for the showing of movies on the advances of science, and a planetarium showing the solar system as seen by a space traveler. Exhibits will be selected by the National Science Advisory Board, and designed by Walter Dorwin Teague Associates.

Structurally, the pavilion will be precast, prestressed concrete. Exterior walls will be faced with exposed aggregate of white quartz. Vertical castings in a variation of Yamasaki's favorite "Gothic" motif will embellish and lend structural support to walls facing the courtyard and major streets. This design will act as open grillwork around a rest area separating two of the units. The buildings will each have their own lighting and heating, and may be used separately after the Exposition.

Photos: Baltazar Korab

Science Building will derive festive air from pool, fountains, domes.

Rest area platform overlooks Seattle, Puget Sound, mountains.



WHO Competition Won by Jean Tschumi

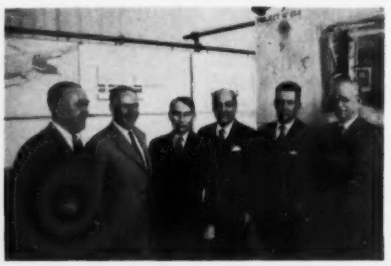
Second Place Goes to Eero Saarinen

GENEVA, SWITZERLAND An international jury meeting here gave first prize in the competition to design the headquarters building for the World Health Organization to native son Jean Tschumi, who recently won the R. S. Reynolds Memorial Award. The jury, consisting of architects Sven Markelius, Gio Ponti, Sir Howard Robertson, and Pierre Vago, WHO officials, and Head of the Geneva Department of Public Works, gave second prize to Eero Saarinen and third to J. Dubuisson. An honorable mention went to Viljo Revell & Company.

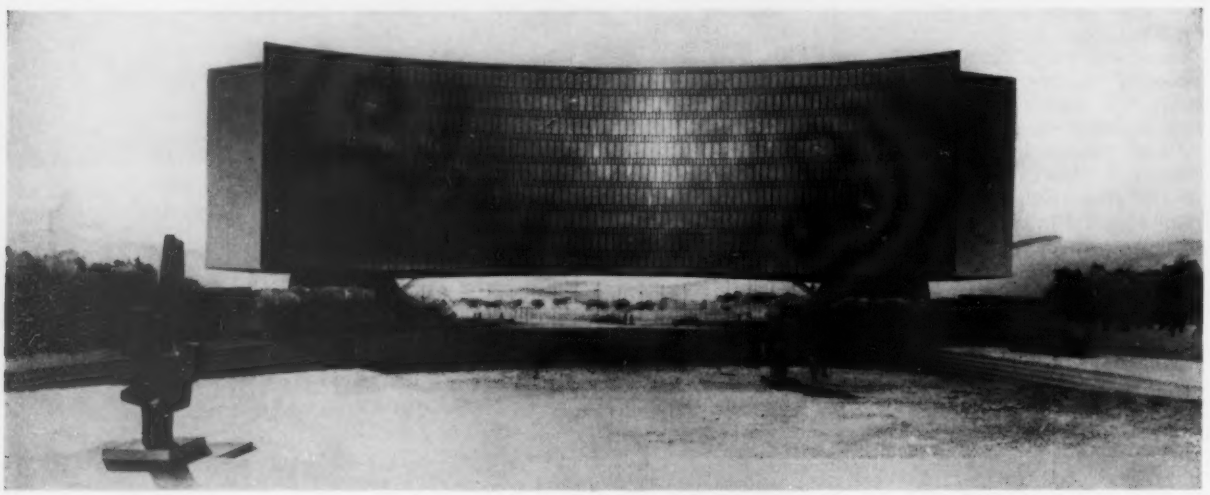
Tschumi's design (above) provides a long, nine-story office building which will face a formally landscaped lawn featuring a reflecting pool. Sitting in the pool will be the board-room building surrounded by board offices. On the ninth floor of the office building will be a terrace, cafeteria, restaurant, and lounges. Office suites of the Director-General and Deputy Director-General will be on an upper floor. The glass-walled lobby will permit the visitor, upon entering, to see the park and board-room pool beyond. A library extending from the board-room unit will have its reading rooms facing on an inner courtyard.

Structure of the project will be reinforced and pre-stressed concrete. Floors in major public areas will be stone and marble; pillars will be covered in serpentine marble. The office building façade will have gray-white sun blinds between the bays to give "the contrasts and projections necessary to enliven the large area of office frontage." This is the technique which won Tschumi the Reynolds Award for his Nestlé Building (APRIL P/A NEWS REPORT, *page 74*). In contrast with the bladed texture of the office building, the board-room building will be of gleaming white marble. From the upper floors, workers will have views of Geneva and Lake Leman.

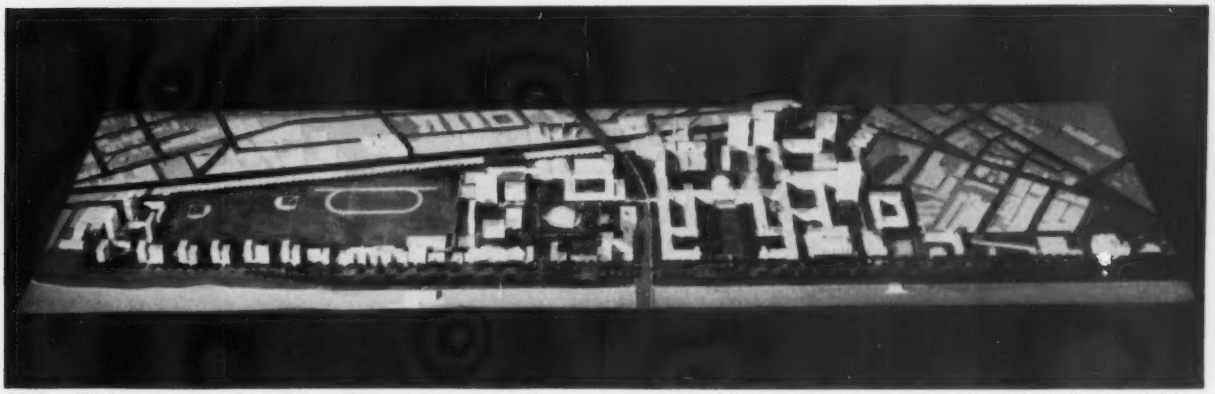
A few changes were made in the design to conform with jury suggestions, notably a 6-percent reduction in the length of the building, reduction in depth of offices, and lowering ceiling of council room.



Jurors Robertson, Vago, Vierne, Candau, Aujaleu, Markelius.



Submission by Eero Saarinen for WHO Headquarters was monumental, doubly-curved building overlooking sculpture garden.



MIT will devote more than $30 millions in its expansion program to building new centers for study and student activities.

MIT ANNOUNCES $66,000,000 EXPANSION PLAN

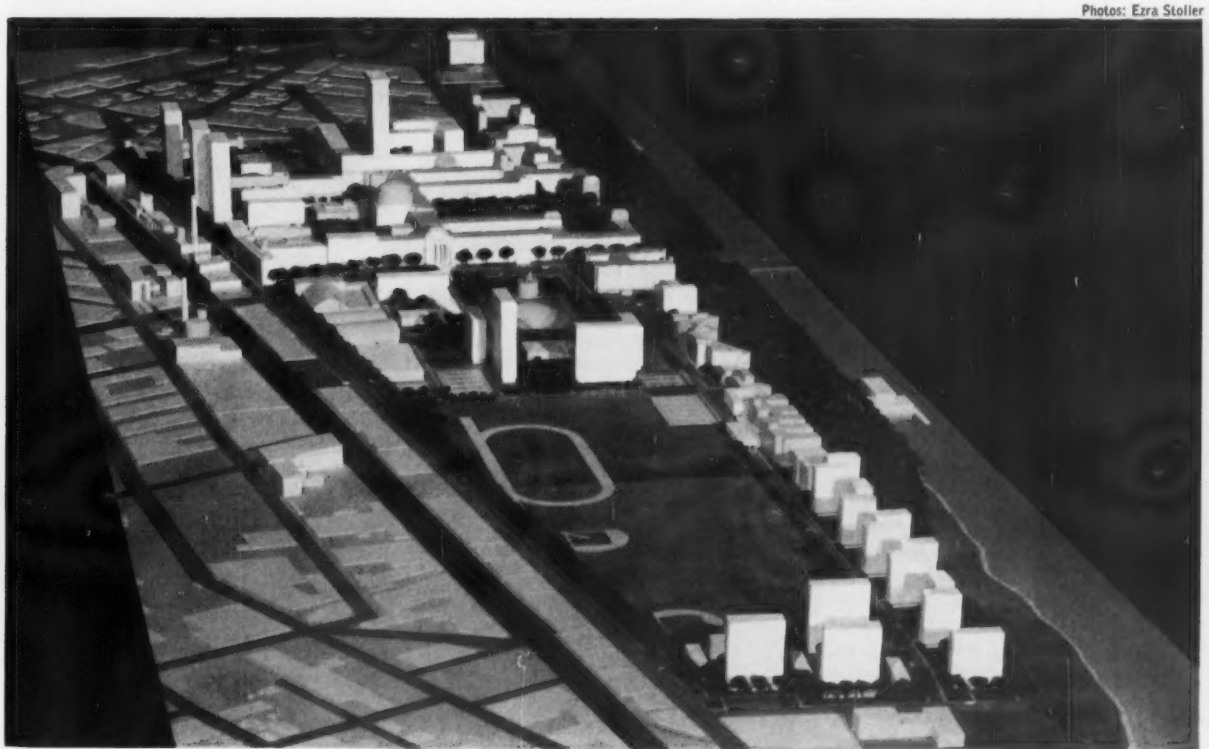
Five New Science Centers Highlight Building Drive

CAMBRIDGE, MASS. A $66 millions expansion program known as the Second Century Fund in honor of the school's centennial has been announced by Massachusetts Institute of Technology. Approximately half of the money —"more than $30,000,000"—will be used for the design and construction of new buildings on the campus. Planning is under the control of a Long Range Planning Committee chairmaned by Dean Pietro Belluschi of the School of Architecture and City Planning.

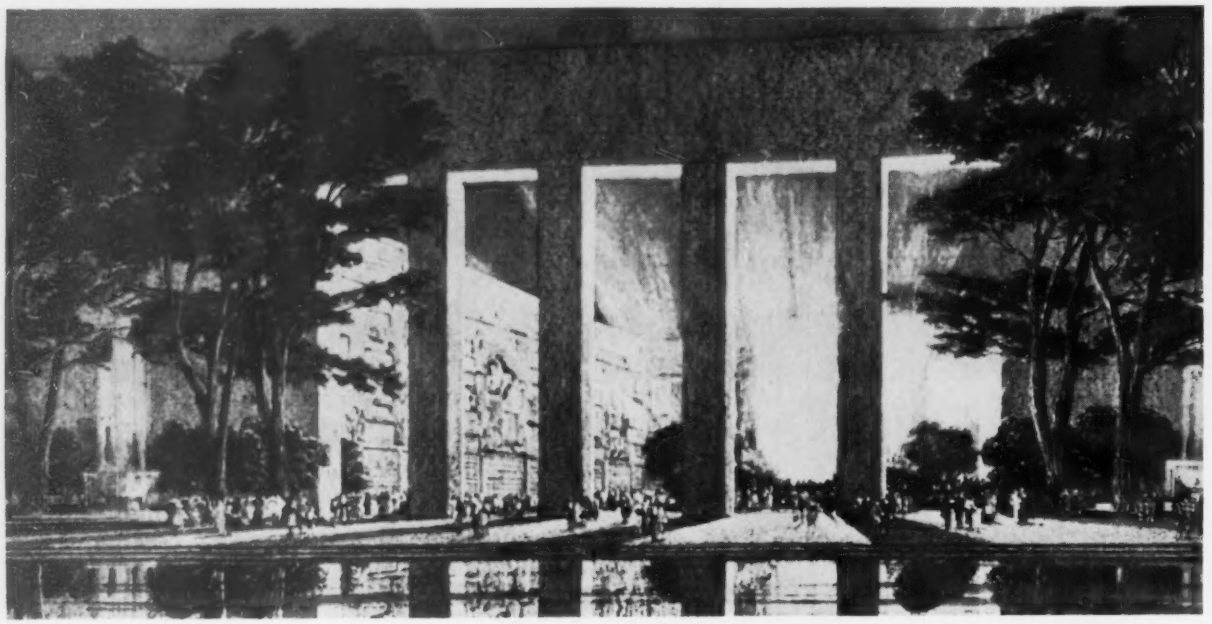
Most significant of the new buildings to be erected under the program are five new study "centers," a concept MIT has been developing for a few years. The first center to be built will be the Center for Earth Sciences, by I. M. Pei Associates. This high-rise building will include offices and classrooms for geology, geophysics, geochemistry, oceanography, and meteorology. Two similar high-rise buildings will house the centers for Materials Sciences and Engineering and for Communications Sciences. Center for the Life Sciences will occupy a 100,000-sq-ft structure to be associated with Torrance Building, where Departments of Biology and Food Technology are now located. A Graduate Center, to include living quarters and social facilities for 600 students, is planned, possibly near Saarinen's Kresge Auditorium and MIT's athletic fields.

An undergraduate Student Center—without living quarters—will be built to provide a focal point for student organizations and activities. Facing the Charles River will be a women's dormitory to accommodate 125 with rooms and study, recreation and dining facilities. A boathouse for the MIT crew is planned to replace the present, 48-year-old structure. Burton House will have dining room and kitchen facilities added.

Photos: Ezra Stoller



New buildings are light colored, include four science centers, graduate center, undergraduate center, women's dormitory.



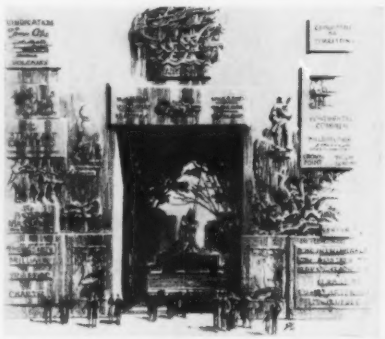
Furor Raised over Proposed "Freedom Monument"

WASHINGTON, D.C. "Washington is becoming an ill-planned, large-scale cemetery." So remarked a member of the Washington Commission of Fine Arts on seeing the recently-revealed designs for the proposed "Freedom Monument" by Architect Eric Gugler and Sculptor Paul Manship. Letters to the editors of Washington papers followed the same aggrieved sentiment, and a front-page article in *The New York Times* by Ada Louise Huxtable asked a number of embarrassing questions about the monument's design and the way it came into being.

Center of all this excitement is Gugler's design, a roofless walled court resembling a large-scale WPA-era post office with the lid off. Erection of this structure and development of the site is expected to cost $12 millions. Manship's sculptures and inscriptions will double this amount. Half would be paid from public funds, half from contributions.

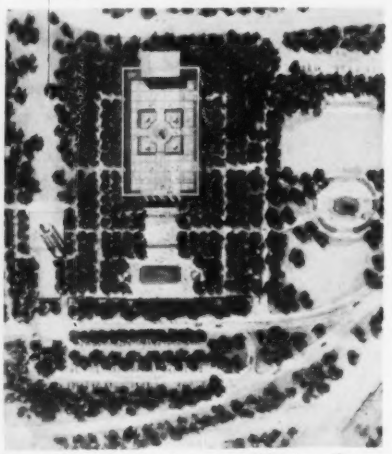
The monument had its start in August, 1953, when *The New York Times* published an article telling of a proposal for a "Hall of History." Architect was Eric Gugler. In August 1954, Congress created the National Monument Commission, consisting of four Senators, four Representatives, and "four eminent citizens." Consultants to this group are Architect John Harbeson (also advisor on remodeling of the East Front of the Capitol); Landscape Architect Gilmore D. Clarke (who will do the landscaping for the monument); and —Eric Gugler. April 1960 saw the Commission's report to President Eisenhower that its research had indicated a great need for such a monument, and that the Gugler-Manship-Clarke proposal filled the bill. On June 2, half a month after the President had recommended the program to Congress, a press conference was held to reveal the design.

Mrs. Huxtable's questions in the *Times* asked: "Did the National Monument Commission, or members of Congress, know of Mr. Gugler's [1953] design at the time that the commission was formed? Who or what made Congress feel that such a monument was necessary . . .? Was there any public invitation of designs? Is it customary for 'consultants' . . . to be the same architects who get the job? Why was the search conducted without proper public information and the opinion of qualified and concerned professionals?"



Sculpture-encrusted monument will be in Arlington National Cemetery.

Monument will be 327½-ft long, 204½-ft wide, and 68-ft high.



Proposed site is between Marine Corps Memorial and Netherlands Carillon.

Rendering: Robert Jacoby

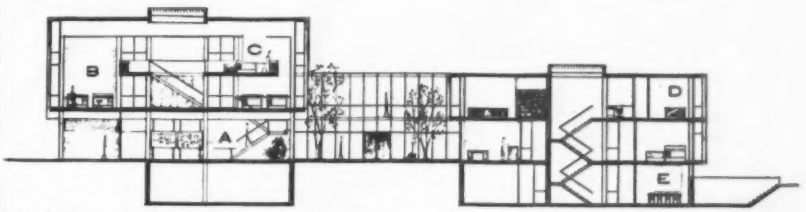
Princeton to Get New School of Architecture

$1½ Millions Building In Campus Master Plan

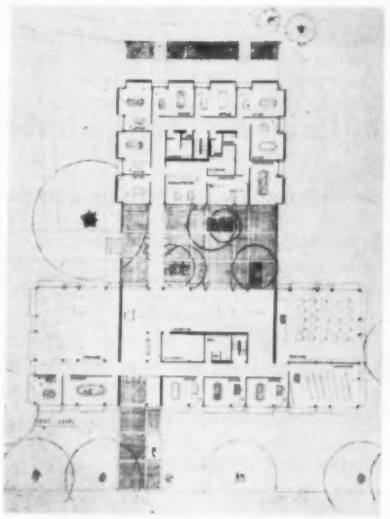
PRINCETON, N.J. The new School of Architecture at Princeton University will have a faceted façade recalling the crenelations of the surrounding College Gothic structures. Designed by Fisher, Nes, Campbell & Associates of Baltimore, the building will have a second floor slightly overhanging the first in a series of bays opaque on the front and glazed at the sides, between which will occur large, floor-to-ceiling glazed areas. According to Architect L. McLane Fisher, "This type of wall treatment offers the occupants a variety and movement of light which eliminates the usual flatness of an all glass wall."

The building will be concrete frame with a textured concrete slab to hold lighting fixtures and create acoustical baffles. Interior structure will be exposed, with simple materials as infilling. On the exterior, brick panels and limestone detailing and trim will be used.

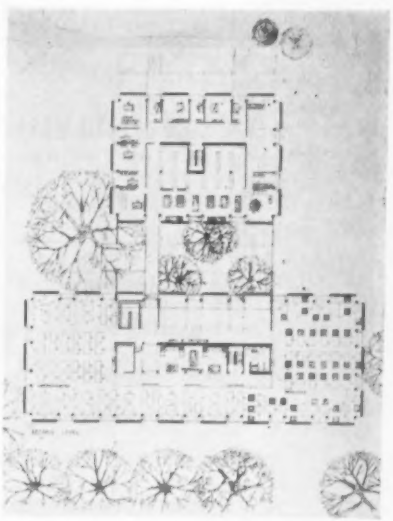
The plan is divided into two units connected by a glass-walled link. The main unit will contain, on its first floor, lecture rooms and offices; on the second floor will be the large drafting room, "flexible and open as possible so that undergraduates would not be too far removed from the graduates," and a conference room; above the conference room will be a workshop for model making, mock-ups, and drafting for thesis work. On the lower level of the smaller unit, a sculpture studio will face an exterior sculpture garden. The first floor will house administrative and faculty offices, the latter to be used for preceptorials; and the second floor will be occupied by the Bureau of Urban Research and the library. The connecting link will be used for social functions and exhibitions of student work, and traveling architectural exhibitions.



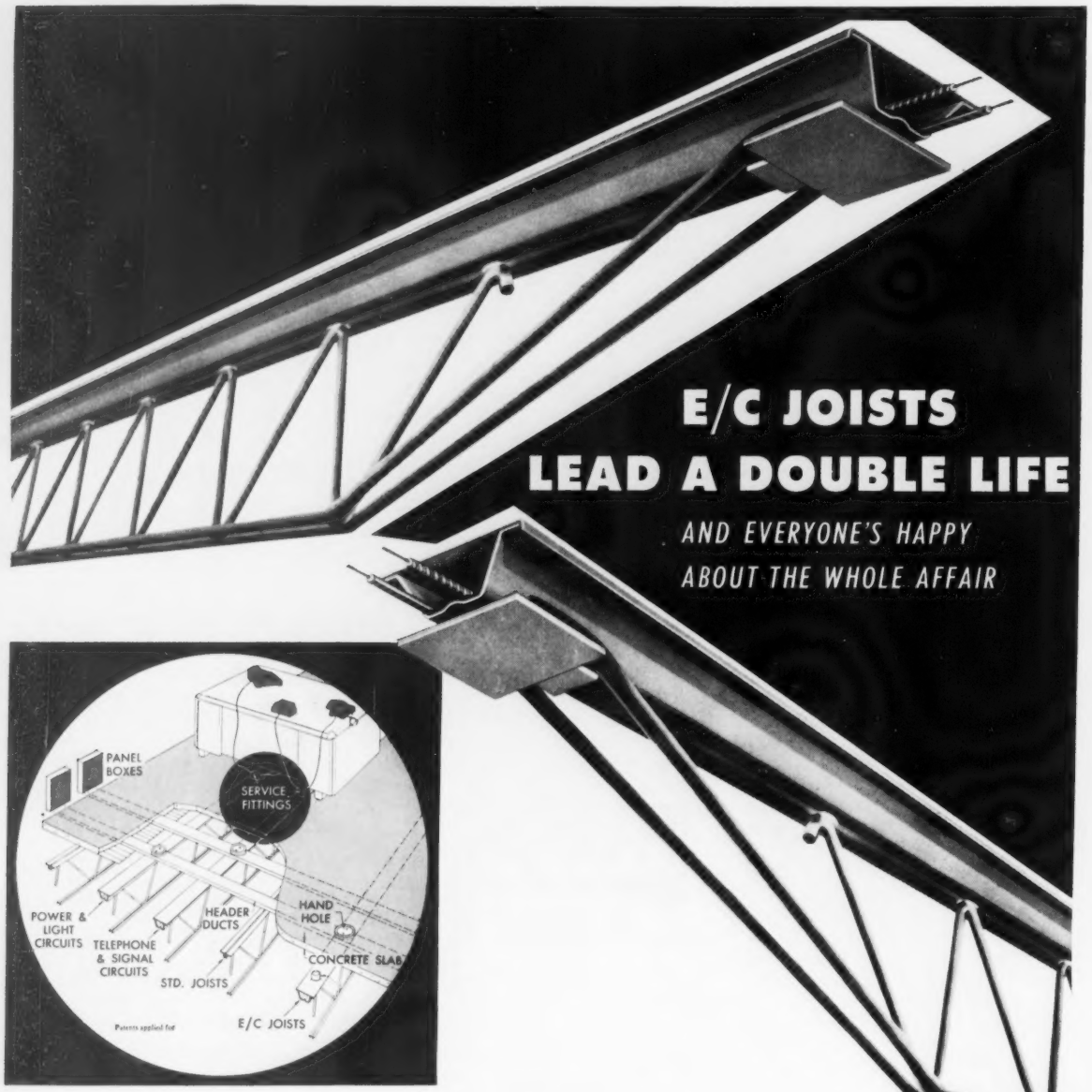
A *classrooms*, B *drafting department*, C *workshop over conference room*, D *Urban Research Bureau*, E *sculpture department.*



Ground floor has classrooms in front, preceptor's offices in small unit.



Flexible drafting department on second floor surrounds conference room.



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PERSONALITIES

Minoru Yamasaki first visited Japan —whence comes much of his inspiration—when he was a junior at University of Washington in 1933. He now considers that a wasted trip, since he thinks he had not matured enough at the time to benefit from it. After a post-graduation stint in the packing department of an importing firm during the Depression, Yamasaki worked for Githens & Keally; Shreve, Lamb & Harmon; Harrison, Fouilhoux & Abramovitz; Raymond Loewy Associates; and Smith, Hinchman & Grylls. In 1949, he and two of his colleagues from SH&G formed their own firm—Hellmuth, Yamasaki & Leinweber. The notable St. Louis Air Terminal was a product of this association. In the mid-1950's Hellmuth split off, and, with the retirement of J. W. Leinweber last spring, the firm became Minoru Yamasaki & Associates. A consistent winner of honors and awards for a number of years, "Yama" (as he is coming to be universally known) has received P/A's First Design Award, Awards of Honor and Merit from AIA, was proclaimed Fellow of AIA in April, and named "Most Distinguished Alumnus" of University of Washington last month. For his latest "delight," see page 49.

J. PALMER BOGGS, Chairman of School of Architecture of University of Oklahoma, will serve as Fulbright Lecturer at National College of Arts, Lahore, Pakistan, during 1960-61 . . . . Former Dean of Columbia University School of Architecture, LEOPOLD ARNAUD, has been appointed Cultural Attaché in Rio de Janiero by U.S. State Department . . . . JEAN VUILLEQUEZ of American Metal Climax, Inc., has been elected president, chairman of board of directors, *and* chairman of executive committee of Lead Industries Association . . . . ROBERT NILES, LaPierre & Litchfield, New York, writes that associated with his firm on the Connecticut Medium Security Prison (p. 77, DECEMBER 1959 P/A) is Hartford architect HENRY LUDORF. . . . Honorary Fellowship in Royal Architectural Institute of Canada will be given to Prime Minister JOHN DIEFENBAKER when Institute has its annual Assembly in Winnipeg in June. . . . U.S. Housing Administrator NORMAN P. MASON is first recipient of AIA's newly-created Memorial Award in memory of F. STUART FITZPATRICK . . . . New president of National Association of Home Builders is MARTIN L. BARTLING, JR., Knoxville, Tenn. . . . ARTHUR F. SCHWARZ, Russell, Mullgardt, Schwarz & Van Hoefen, was re-elected chairman of the St. Louis Plan Commission . . . . M. M. ANDERSON of Alcoa was re-elected president of The Aluminum Association . . . . Winners of New York Chapter AIA's Arnold W. Brunner awards were JOHN J. CARLOS, HAROLD EDELMAN, STANLEY SALZMAN.

Morris Milgram not only believes enough in privately-financed, open-occupancy housing to build it, he also lives it. His home is in his own AIA-award - winning Greenbelt Knoll, a wooded development outside Philadelphia, that quickly sold its 19 homes (ranging from $22,500 in 1958) on a ⅔ white, ⅓ Negro basis. This integrated suburban community is only one of several by Modern Community Developers, Inc., headed by Milgram. There are two in Princeton N. J., with 40 homes, another in the Philadelphia area, with 139 homes, and one newly-started in Wilmington, Del. (first of MCD's ventures below the Mason-Dixon line). These have all proceeded smoothly—acclaimed enthusiastically by residents, neighbors, interested on-lookers, and visiting foreign delegations. MCD and Milgram have been limelighted, however, in the continuing furor over a proposed tract in Deerfield, Ill., suburb of Chicago where 12 of 51 homes were to be sold to Negroes. Skeptical townspeople, acting through their Park District, condemned the 23-acre site for a park, halting the development. A recent court decision went along, refusing to recognize a civil-rights issue, despite the Park District's having considered other sites, not this one, during the two years when it was for sale. Litigation handled by Adlai Stevenson's law firm continues, and Milgram has strong hope for a reversal by the Circuit Court of Appeals. Milgram's approach of controlled open-occupancy is not visionary (nor is it discriminatory, as segregationists claim!); he believes it to be the only realistic approach to minority housing. A graduate of the University of Newark in labor economics, he has long championed the rights of minorities; he was with Workers Defense League for 10 years before entering the building industry. Now a vigorous 43, he has received numerous honors, among them American Veterans Committee Bill of Rights Award and the Walter White Award of National Committee Against Discrimination in Housing. He serves on the board of National Housing Conference and was appointed in 1958 to the Pennsylvania Governor's Committee to Study Discrimination in Housing. MCD itself has a major advisory program to communities and groups across the country, and its own Advisory Committee is an impressive roster of notables.

Architect GEORGE H. TSURUOKA is new Manager of Housing and Cement Products Bureau of Portland Cement Association . . . . Vermont Marble's A. T. Howe was named president of Marble Institute of America . . . . The traditional gouache renderings of GEORGE COOPER RUDOLPH won Birch Burdette Long Prize for rendering, competing against more unorthodox work. . . . LeBrun Fellowship—worth $3000 for six months European travel —has been awarded to HUGH W. BROWN III, of Shawnee, Oklahoma.

One of the country's outstanding teachers and commentators on housing and city planning, **Burnham Kelly,** will become Dean of College of Architecture at Cornell University in the fall. A catholic educational background provides Kelly with a breadth of information and insight unique in his field. He received a liberal arts degree from Williams College, a law degree from Harvard Law School, and, after practicing law in Providence, R. I., for two years, a Master of Planning degree from Massachusetts Institute of Technology in 1941. He has been identified with MIT ever since, "teaching city planning . . . design and controls." He headed the Albert Farwell Bemis Foundation (devoted to housing research) 1949-54. He authored *The Prefabrication of Houses* (1951), and contributed to *Design and Production of Houses* (1959). Interestingly, Planner Kelly succeeds Planner Thomas W. Mackesey as Cornell Dean.

Sketches by Ramiro Corbetta

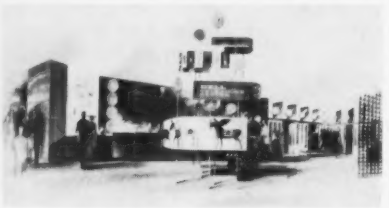
Mies Design to Spark Baltimore Renewal Plan

A Mies van der Rohe-designed office building will be the initial building in Charles Center, Baltimore's 22-acre downtown-renewal project. The 22-story, gray-glass and aluminum tower will have 275,000 sq ft of office space and 30,000 sq ft of commercial space on first two floors for banks, restaurants, drug stores, and similar retail establishments. Design includes a 120-car underground garage. Construction is expected to begin in 1961, with Metropolitan Structures, Inc., of Chicago as developers.

When complete, Charles Center will include eight new office buildings, retail space, public parks, parking garages, transit facilities, and a new hotel.

Architects Design 'Phone Center for Democrats

Official delegates to Democratic National Convention in Los Angeles this month are enjoying the use of a special telephone center designed for them by the Angeleno architectural



firm of Leach, Cleveland & Associates. The center has a message center where 12 attendants answer telephones and take messages for delegates; an information booth where attendants answer questions about travel, Los Angeles, hotel accommodations, and other mysteries; a long-distance pay-station area; and a press area containing soundproof rooms for tape recordings. Center is decorated in red and white, three shades of blue, and natural walnut. Emblems of Democratic Party and Pacific Telephone & Telegraph Company embellish walls and screens.

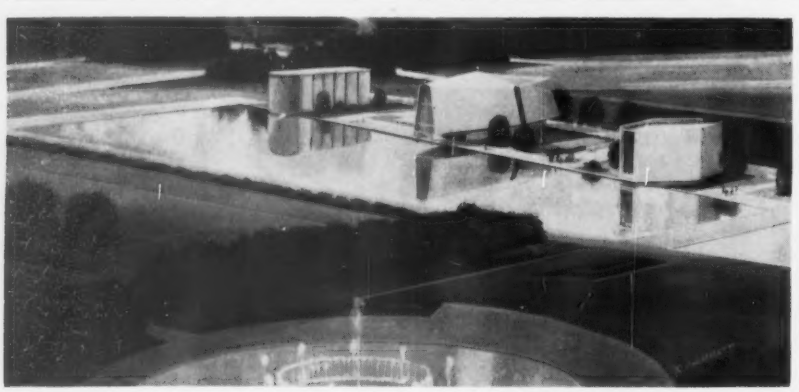
GOODBYE, PICCADILLY

Word from London has it that the proposed "design" for the 13-story office building *cum* advertising billboard for Piccadilly Circus (page 54, JANUARY NEWS REPORT; page 86, APRIL NEWS REPORT) has been turned down by the Minister of Housing. Speculator Jack Cotton, who also has his thumb in New York's Grand Central City pie, has been invited to submit another design.

Auto Show Opens Cobo

Cobo Hall, located in Detroit's Civic Center, is said to be the world's largest exhibition building. An outstanding feature of the project is the vastness and flexibility of exhibition space. There are four exhibit areas (of about 100,000 sq ft each) in the three-story structure. Three of these areas can be combined into one enormous hall in which there are only ten columns. The roof of the hall, which can be used for parking 1150 cars,

is accessible by a spiral ramp; there are also provisions for a heliport on the roof. Further parking facilities are provided in an underground garage and other lots in the area. Tne hall also contains 32 meeting rooms, a banquet hall, cafeteria, and a coffee shop. An addition, planned for 1961, will be a circular building used for staging spectacles and sporting events. Cobo Hall will be christened by National Automobile Show, this October. Architects-Engineers of the project are Giffels & Rossetti, Inc., of Detroit.

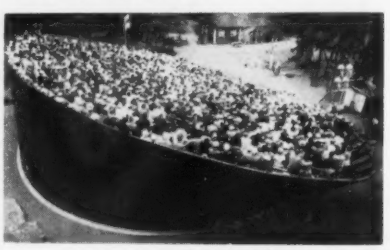


Lagoon Site Set for Idlewild Chapels

Chapels of three faiths—Protestant, Catholic, and Jewish—will be constructed on the lagoon in the central plaza of New York International Airport. Originally scheduled for another site (where a Catholic chapel has already been built and designs for Protestant and Jewish chapels announced), the religious structures were displaced by the individual airline terminals which will eventually ring the plaza. S. Sloan Colt, Chairman of Port of New York Authority, stated that the design of the chapels "will complement the International Arrival Building and Control Tower and individual airline terminals"—buildings by such diverse talents as Skidmore, Owings & Merrill; Eero Saarinen; and Kahn & Jacobs.

About-Face Amphitheater Whirls Audience

Rotating amphitheater in Tampere, Finland, can twirl audience around to face the rear in matter of seconds. In this manner, scenes may be preset, then replaced while audience watches scene at other side. Seeing "Carousel" in this manner would prove quite a dizzying experience.



Continued on page 60

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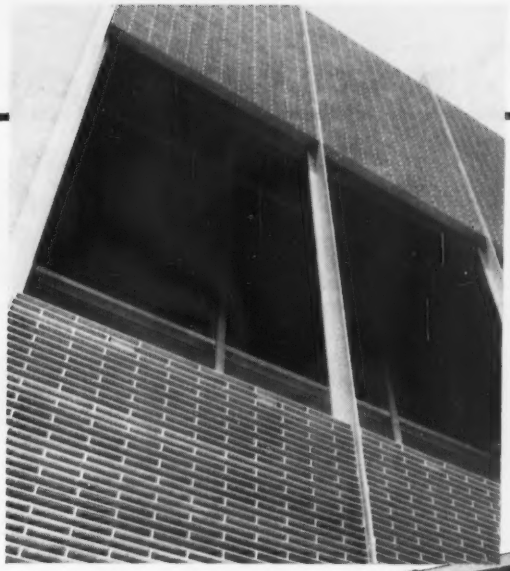

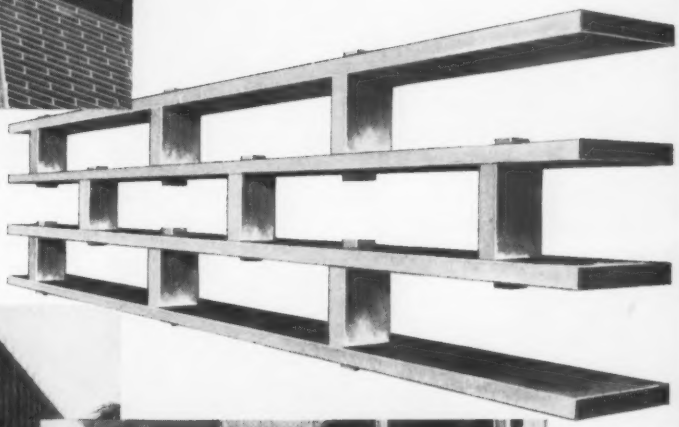

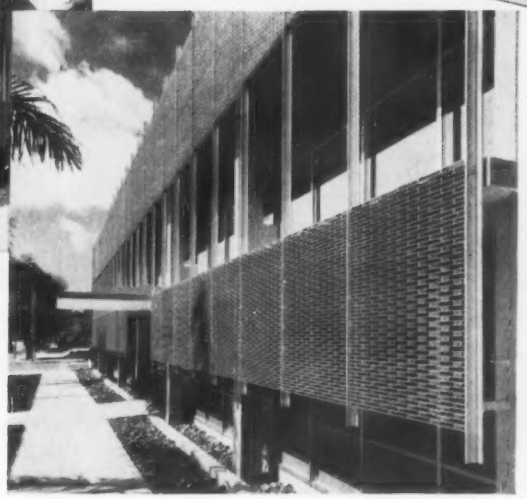

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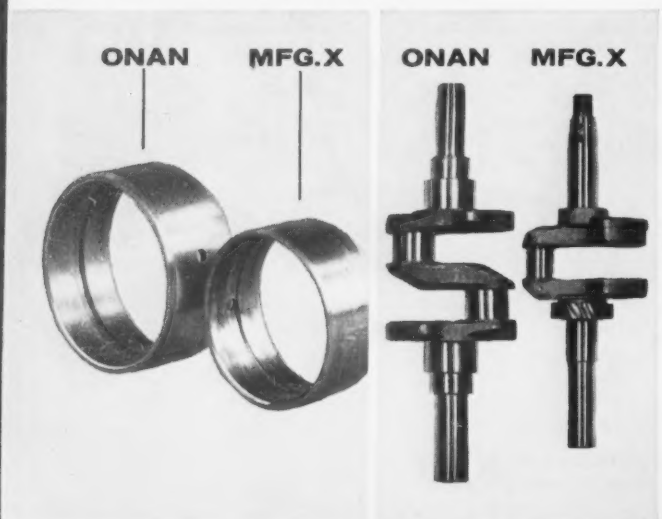

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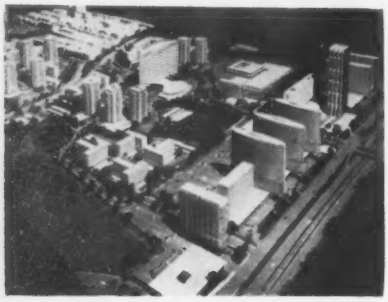
Zeckendorf Sells Century City Contract



Los Angeles' large Century City development project changed hands when Webb & Knapp sold its contract to purchase the property to The Kratter Corporation. Seller of 267-acre tract is 20th Century-Fox Film Corporation. Previously announced plans by Welton Becket & Associates with William Pereira & Associates, associated, are expected to be followed. One building already on the site is Becket's recently completed office building for his own firm. Other structures will include high-rise, middle-income housing, a large shopping center, and a 1000-room hotel.

Glossary

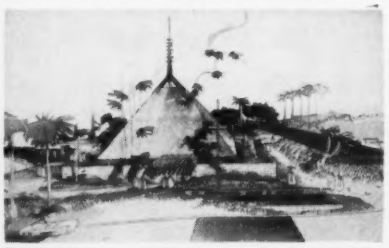
Adman-ese has been infiltrating the architectural vocabulary of late—architects, public-relations drum beaters, and fabricators looking to the argot of Madison Avenue to describe their ideas and activities. Three recent examples: *horizoneering* (predicting "whither are we drifting"); *conceptualization* (a rendering or model photograph); *humanation* (what we need to bring architecture back to people).

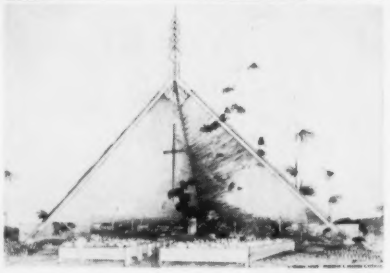
LINCOLN CENTER HIGH RISE

Lincoln Square Plaza, an office building to be erected adjacent to New York's Lincoln Center, is "designed to create a compatible relationship with the Center for the Performing Arts." The plan includes a 3600-sq-ft plaza and pool bounding the building on two sides. The 26-story office tower, without setbacks, will have a precast-concrete façade in keeping with materials to be used in Lincoln Center. The building will have two entrances connected by an arcade; an underground connection with Lincoln Center will simplify sharing transportation facilities. First and second floors of tower will be devoted to exhibitions of art and commercial subjects. Architect is Robert Bien; Associate Architect: Jack Freidin; Designers: Freidin-Studley Associates.

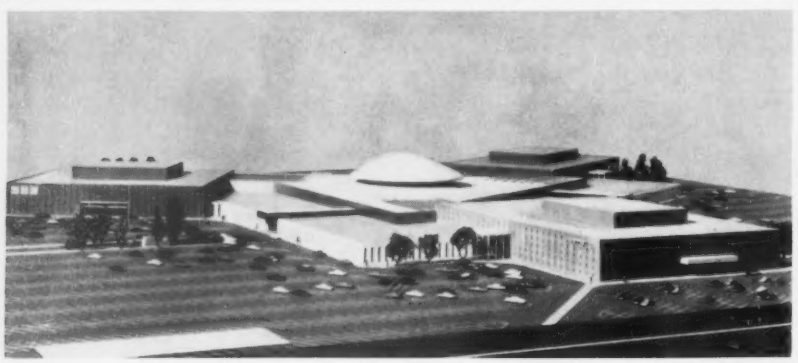
Sculptured Site for Pyramidal Church

Northridge Congressional Church by A. Quincy Jones & Frederick E. Emmons, Los Angeles, will sit at the intersection of two heavily-traveled streets. In order to attain maximum privacy, the architects "sculptured" the site—which descends from the streets—so that the sanctuary will nestle behind earth mounds. The





church will be developed in several phases, first the sanctuary and fellowship hall, to be followed by youth education building, outdoor chapel, children's education building, indoor chapel, and board room-library. The sanctuary will have a lofty pyramidal roof topped by a skylight.



"Largest Regional Shopping Center in U.S." Announced

What is projected as the largest regional shopping center in this country has been designed by Victor Gruen Associates for Randhurst Corporation (jointly owned by three large Chicago department stores: Carson, Pirie, Scott & Company; Montgomery Ward & Company; and Wieboldt Stores, Inc.). The center, to be located in Mt. Prospect, Ill., will have a triangular plan, with a branch of one of the parent stores at each apex. Sides of the triangle will contain more than 100 other stores. Six arcades will bring the shopper from parking lots into three courts—one before each department store. The courts will open onto a domed, three-level, central "galleria." The entire center will be enclosed, to be air conditioned in summer and heated in winter. Gruen, incidentally, has just opened an office in Chicago, headed by Raymond O. Brinker.

CALENDAR

"Prestressed Concrete, Key to Creative Architecture and Imaginative Engineering" will be theme of 6th annual convention of Prestressed Concrete Institute in New York, Sept. 27-30 . . . . Fall Conference of Building Research Institute will be at Shoreham Hotel in Washington, D.C., Nov. 15-17 . . . . New York Coliseum will house 24th National Exposition of Power and Mechanical Engineering, Nov. 28-Dec. 2.

Continued on page 62

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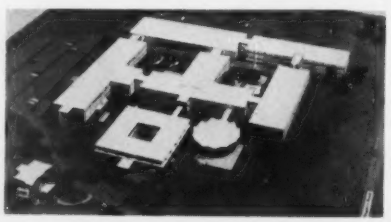
will offer unobstructed view for 75,000 persons. For smaller events, lower tiered seating will be movable to permit close-up seating, while upper seating tiers will remain stationary. Upper tier will form a circular, rigid frame, stabilizing a ring of concrete masts on periphery of structure. Space will be covered with retractable aluminum-paneled skin supported by fabric of tension cables. Architects-Engineers for the project are Thalheimer & Weitz, Philadelphia.

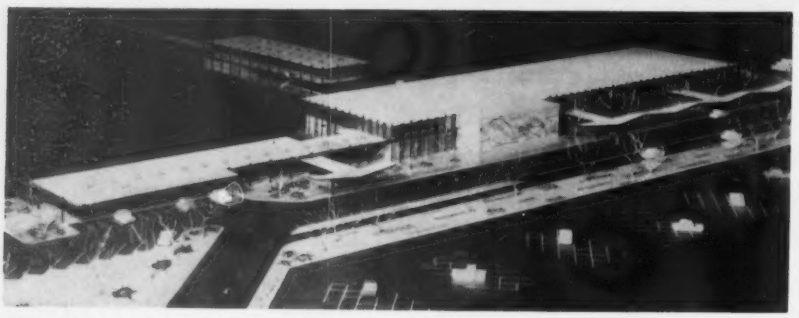
OBITUARIES

Architect Charles Holden died in London in May. He designed London University and many of the stations for London's Underground. He gave Sir Jacob Epstein his first architectural commission, for the figures of "Day" and "Night" on his Transport Board Building. . . . Albert C. Martin, Sr., founder of Albert C. Martin & Associates, Los Angeles, died April 9 . . . . Burnham Hoyt, former dean of the School of Architecture at New York University died in Denver on April 7. He designed Red Rocks Amphitheater near Denver . . . . Henry V. Murphy, noted church and school architect, died May 17 in Brooklyn . . . . John Gillett, last original member of Toledo firm of Mills, Rhines, Bellman & Nordhoff (now Bellman, Gillett & Richards), died May 29.

Ground Broken for "Building-Block" Center

First stage of construction is beginning on seven-unit complex of buildings to house Information Technology Center of Itek Corporation in Lexington, Mass. Project, which will house up to 2500 Itek employes, will bring together research, development, manufacturing, and administration functions, presently located at three separate sites. Buildings, designed by Fulmer & Bowers, Princeton, N.J., will be based on groups of 27,000-sq-ft modules—"a building-block design concept." This approach makes possible units, or modules, that can be arranged to provide maximum exterior exposure for all offices in complex. Stage I, consisting of five modules, includes a T-shaped office and research building and a main laboratory building. Completion of this stage is expected in six months.





FRESNO AIR TERMINAL IS UNDER CONSTRUCTION

Architect Allen Y. Lew reports that his design for the Fresno, Calif., air terminal is in the process of being realized. The terminal will be a long, one-story structure enclosing ticket counters, concessions, waiting room, dining room, bar, kitchen. Escalators will lead to a lower level containing passenger- and cargo-baggage facilities, which will open onto the concourse. Future elements in the plan are Government agency and service buildings, including the control tower. The terminal will have landing positions for nine planes. The field is the only non-military strip between San Francisco and Los Angeles able to take jet passenger planes and the main field in San Joaquin Valley. Structural Engineer: Wilson & Wilson; Mechanical Engineer: W. L. Donley; Electrical Engineer: Edward Lowe; Airport Planning Consultant: Leigh Fisher & Associates; Landscape Architect: Burr Garman; Graphic Design Consultant: Gene Tepper & Associates.

Whoopsie-Doodle Stadium

With the somewhat sudden arrival of Spring in Washington, the usual controversies over the Capital's architecture blossomed brightly.

Object of attention this time was the proposed new stadium for which funds are now being readied. The Fine Arts Commission didn't object —but it registered what it called an artistic complaint about the "roller coaster" effect of the cantilevered concrete roof. Said Architect-Member Douglas W. Orr, "it has a whoopsie-doodle look."

LEND A HAND

Members of California State Polytechnic College chapter of Tau Sigma, honorary engineering fraternity, have created a $250 scholarship for other students. Scholarship is available to any student in need if his grades are in upper one-third; he need not be fraternity member. Action drew praise from school officials.

Investigations but Little Money for Top Talent

The vexing problem of how to keep top men in top government posts got a three-day airing before the Senate's Subcommittee on National Policy Machinery.

Conclusions seemed to be: pay better; excuse them from the "speech circuit"; keep Congressional questioning within bounds; improve the understanding of government machinery.

And, almost by way of comment, the National Science Foundation chose the same week to announce results of its most recent survey of scientific and engineering salaries. The results (for 1956-58): median salary was $7900, top (in management posts) was $11,000.

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Perils of Covering Adjourning Congress Described

Congress, Now Politicing, Cleared Many Measures

By E. E. Halmos, Jr.

The Washington year has reached a point where a commentator has to face up to a rather unpleasant fact — for a commentator:

He must either climb 'way out on a limb and make some fairly shaky predictions, or he must take his readers into his confidence, and admit that he's afraid to say very much about many important matters.

Trouble is that when you read this column, Congress will probably have packed its papers and its issues and headed for the political hustings, having done whatever it has chosen to do (or not do) about things of importance to architects and the construction industry.

But, as the words are written—well in advance of delivery to your desk—nearly everything is still very much up in the air.

Take school construction aid, for instance: as you know, the House, at the very end of May, put through a four-year, $1.3-billions program by a fairly close vote (206 to 189), marking the first time in many years that such a general aid-to-education bill has passed this body. Earlier, the Senate had passed a somewhat similar bill, providing $1.8 billions for two years.

On the basis of previous performance, your commentator would be safe enough in a prediction that when House-Senate conferees get through their work, the House version would be raised a little, the Senate lowered, and the final bill might come out at about $1.5 billions for three years.

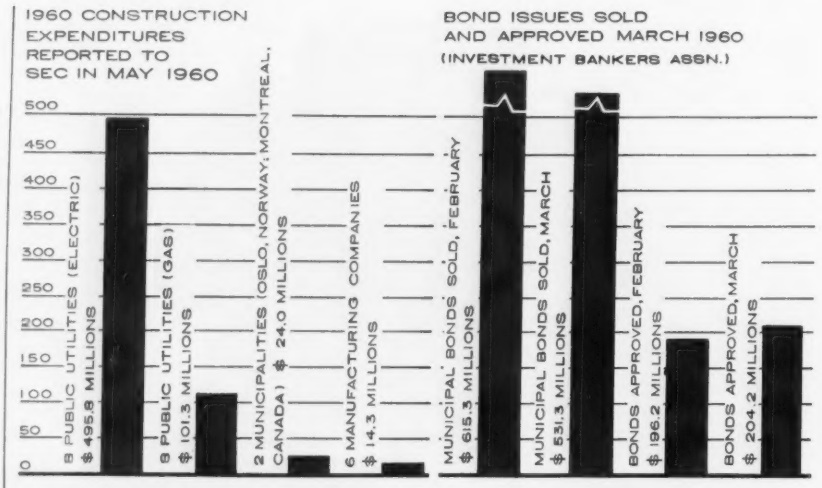
But this time, it appears that the bill that comes out of conference will be radically different from that passed by either house: the House bill contained the controversial "Powell amendment" to confine federal aid to schools that accept integration of races; the Senate bill contained the equally controversial provision that federal funds could be used to boost teachers' salaries.

You could get bets either way, early in June, as to whether the conferees could agree at all—and whether Congress would accept any compromise worked out.

Then there was the Area Assistance Bill (S 722) which was passed by both houses, vetoed—and the veto upheld. Ordinarily, that would kill the subject, but this is a political year. So a substitute was offered at once, and it might still come up for action.

The original bill provided a total of $251 millions in appropriations, for

Continued on page 66



BOND ELECTION RESULTS — MARCH 1960 BY USE OF PROCEEDS

USE OF PROCEEDS	APPROVED		DISAPPROVED	
	AMOUNT	NO	AMOUNT	NO
EDUCATION:				
ELEM. & SEC.	$138,777,000	84	$20,893,000	16
OTHER	——	0	1,369,000	4
ROADS & BRIDGES	28,548,000	7	708,000	3
WATER & SEWER	21,035,000	25	12,586,000	6
HEALTH & WELFARE	200,000	1	160,000	1
RECREATION	4,945,000	3	2,120,000	3
PORTS & AIRPORTS	5,000,000	1	238,000	2
INDUSTRIAL	1,065,000	2	——	0
REFUNDING	332,000	2	——	0
FLOOD CONTROL	600,000	1	——	0
ADMIN. & OFFICE BLDG.	150,000	1	725,000	2
UNCLASSIFIED	3,538,000	8	762,000	2
TOTALS	$204,190,000	135	$39,561,000	39

BOND ELECTIONS SCHEDULED AS OF APRIL 1, 1960

MONTH	AMOUNT
APRIL	$109,933,000
MAY	85,348,000
JUNE	828,253,000
SEPTEMBER	200,000
NOVEMBER	259,945,000
NO DATE SET	6,738,000
TOTAL	$1,290,417,000

USE OF PROCEEDS	AMOUNT
EDUCATION:	
ELEM. & SEC.	$507,468,000
OTHER	6,233,000
ROADS & BRIDGES	105,303,000
WATER & SEWER	36,100,000
OTHER UTILITIES	2,870,000
HEALTH & WELFARE	28,816,000
RECREATION	30,812,000
PORTS & AIRPORTS	5,320,000
INDUSTRIAL	800,000
REFUNDING	37,000
FLOOD CONTROL	5,080,000
PUBLIC HOUSING	2,950,000
VETERANS AID	500,000,000
ADMIN. & OFFICE BLDG	42,669,000
UNCLASSIFIED	15,959,000
TOTAL	$1,290,417,000

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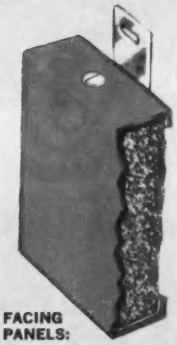

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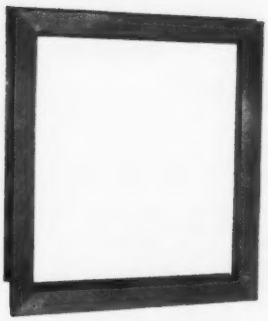

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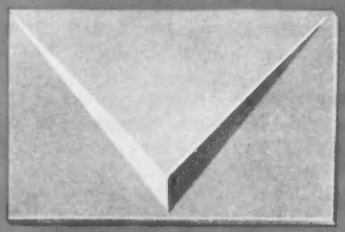

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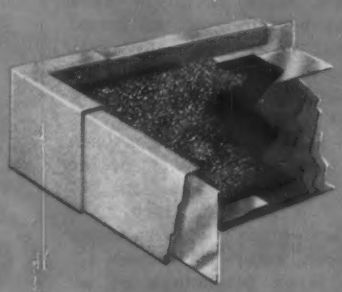

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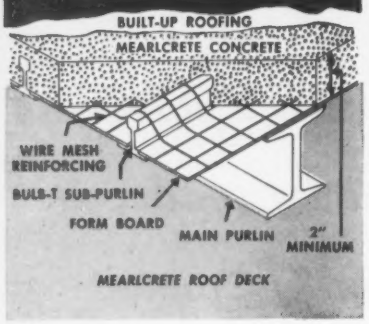

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For more information, circle No. 306

Continued from page 64

use in both rural and urban areas, aid to private industry and co-operatives, among others—all with the aim of creating jobs. It was fought by many industry groups, the U.S. Chamber of Commerce commenting that the bill would, in effect, foster the continued production of buggy whips and carriages, rather than permit industry to move to more favorable areas and products.

Senate Minority Leader Dirksen offered the substitute, authorizing $180 millions appropriations, cutting out aid to rural areas, etc.

A third example in the hoppers on Capitol Hill was the Emergency Home Ownership Act (HR 10213) which went through the House, but hadn't been scheduled for Senate consideration. It would, as you know, set up a $1 billion revolving fund, out of which Federal National Mortgage Association could buy FHA mortgages as a further prop for construction of 70,000-80,000 lower priced homes.

Also still to be acted upon were many more proposals: for tax-aid to the self-employed through allowances of deductions for self-financed retirement programs; for raising the minimum wage "floor" from the present $1.00 an hour; for a "National Olympiad of the Arts"; for permitting common-situs picketing on construction jobs; and many others.

Voters Are OKing Schools —Other Financial News

Financial circles got a nasty—if short-lived—jolt recently when voters in nearby Arlington, Va., defeated proposals for a total of $7.58-millions bond issue to finance widespread public improvements.

School officials immediately expressed fears for a planned $26-millions bond issue to finance school construction, and local newspapers were full of stories about a "taxpayers' revolt." However, the school bonds were OK'd, by a heavy margin, a few weeks later.

Nevertheless, the voters' action got careful scrutiny throughout government circles, since it might have signaled the beginning of an actual revolt against the everincreasing costs of operating governments in suddenly swollen residential areas surrounding major cities.

Actually, to anyone who has been following the monthly reports of the Investment Bankers Association (reported in P/A since January), the Arlington action isn't so surprising. On the record, voters have been approving a large percentage of all school bond proposals; but they've

Continued on page 70

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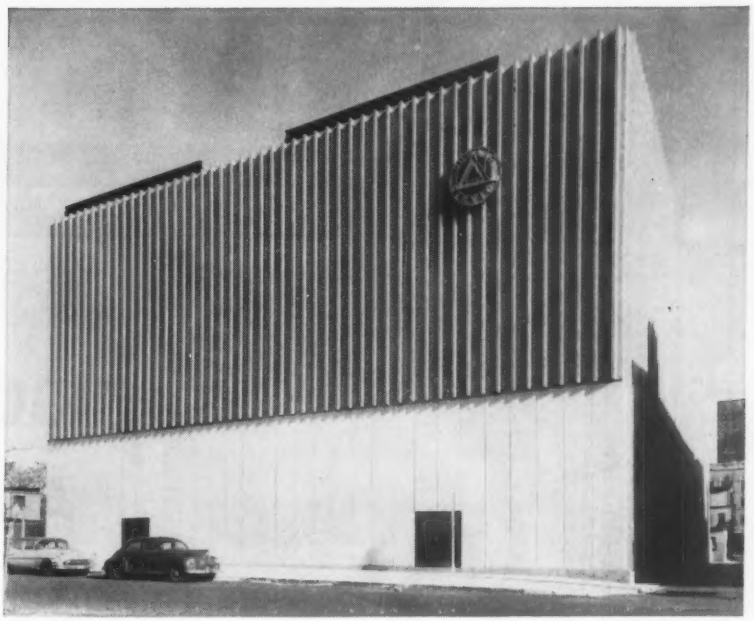
Prestressed Concrete Double Tees Standing on End Provide Imaginative New Wall Treatment



● Double tee beams of prestressed concrete, best known for their value in roof and floor systems, are now finding an attractive new use. A recently completed switching station of the Public Service Electric & Gas Company of Newark, N. J. has two walls made of side-by-side 10-ton vertical double tees running the full height of the building—nearly 61 feet—and creating an interesting pattern.

A third wall, featured in the photograph above, is topped by tees 39½ feet tall. The bottom section of this wall employs removable flat concrete slabs, to facilitate the replacement of major equipment.

The architect found that using prestressed double tees in this manner had economic as well as design advantages—including off-site fabrication and stockpiling, fast erection with minimum personnel, no scaffolding, and lower heating costs due to better insulation.

To produce the 5,000-psi concrete specified for this job, the prefabricator chose dependable 'Incor'® 24-hour cement.

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Consulting Architect
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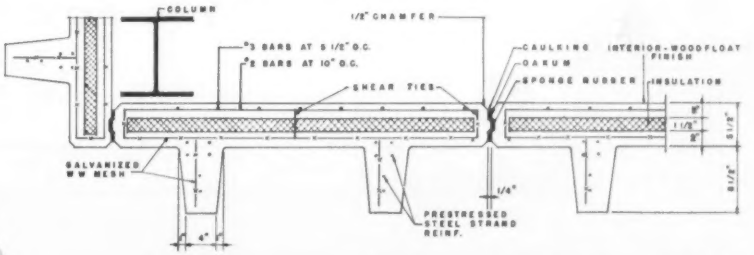
Glass fibre insulation was sandwiched between layers of concrete in the crossbar of the double tee unit to provide an excellent thermal barrier.

HORIZONTAL SECTION



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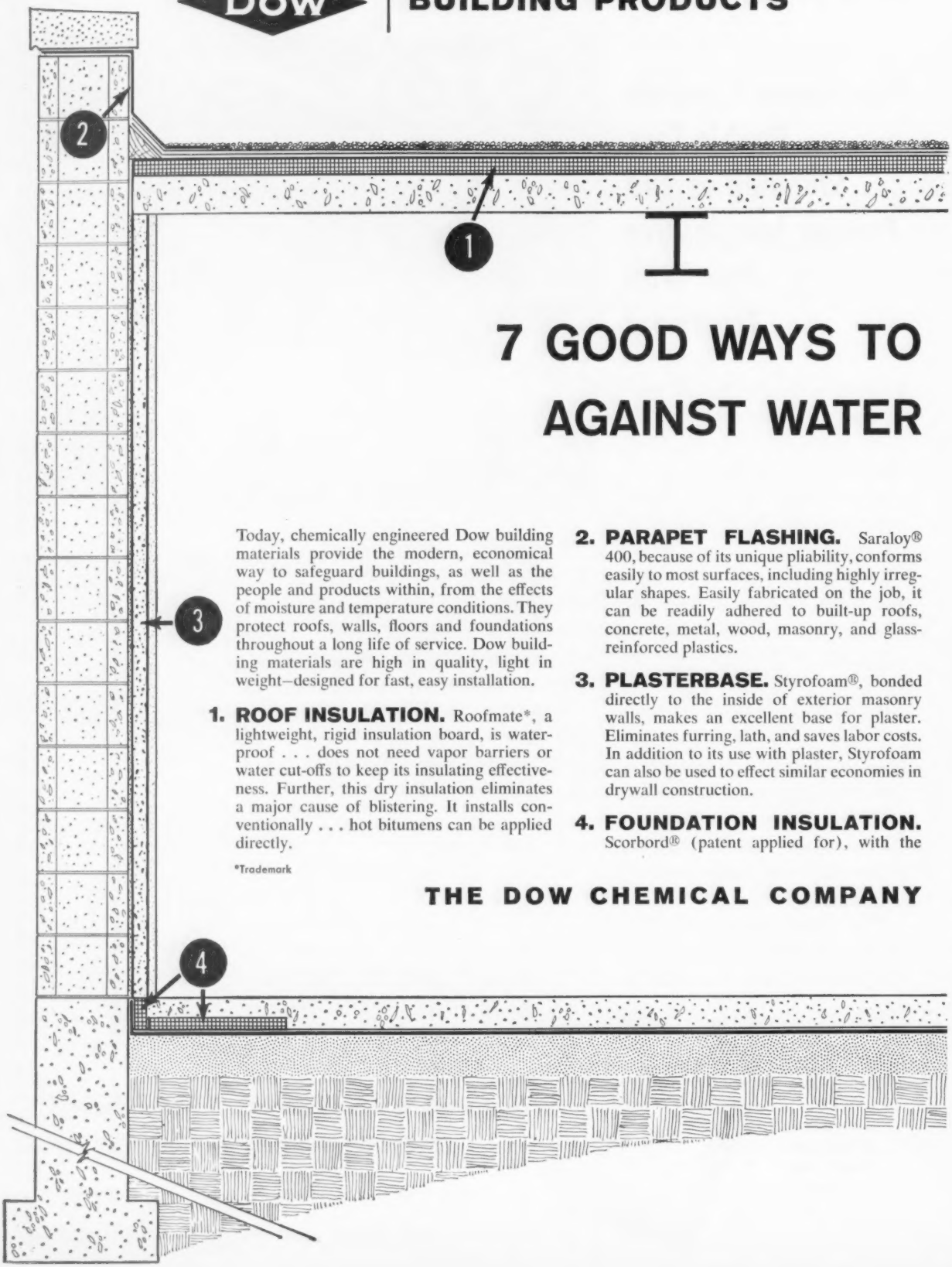

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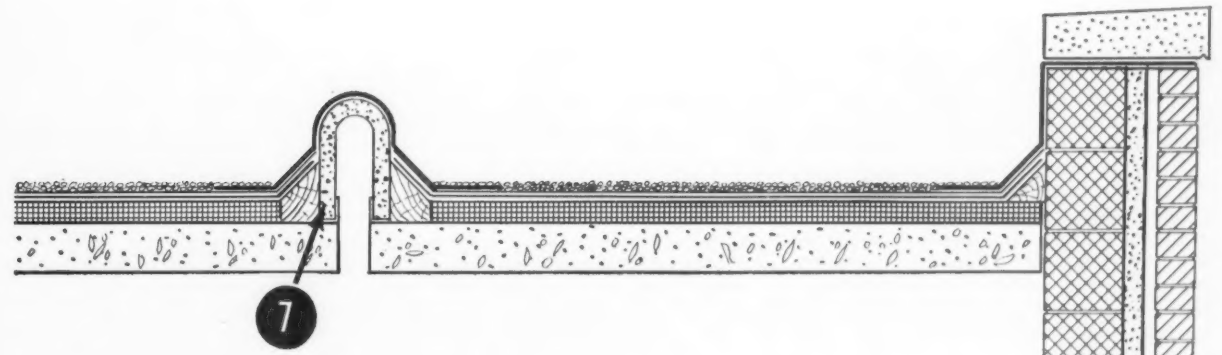

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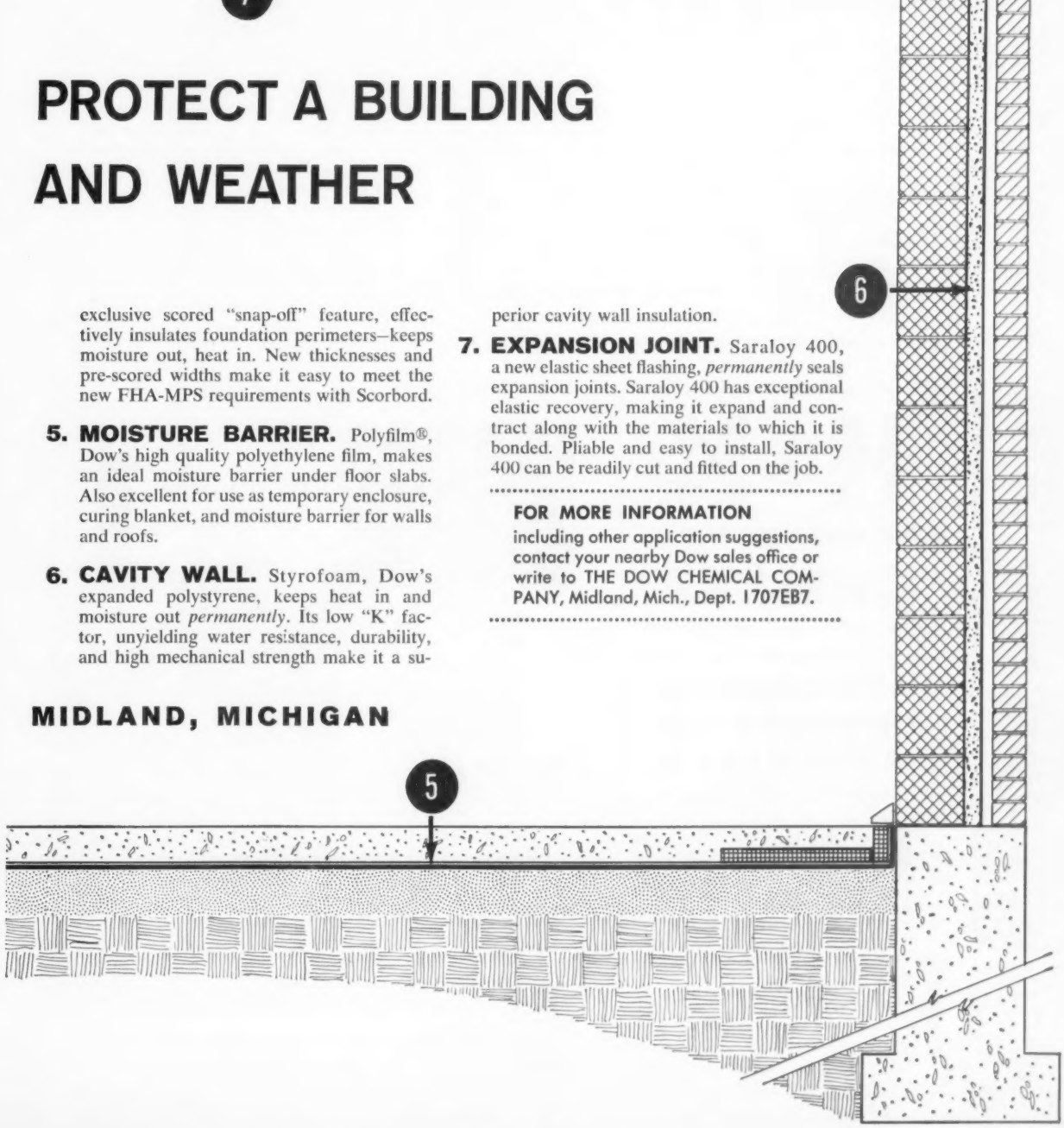


Continued from page 66
been turning down almost as many proposals for sewers, health and welfare construction, public buildings and the like as they've OK'd. Most of the time, IBA economists think, this has been the result of voters' feeling that many of the non-school improvements sought aren't really vitally needed.

By way of demonstration (see charts on page 64) during the month of March, voters approved 84 percent of the nearly $160-millions school bonds presented to them; but only 33 percent of proposals for ports and airports, 50 percent of health and welfare projects, 33 percent of administrative and office building proposals.

Elsewhere on the financial scene, business prospects remained good. Electric utilities continued their record-setting pace of construction plans; so did gas and other utilities. Private construction plans kept to a fairly steady pace.

Housing—despite dire predictions as the year began— continued to boom along, at a pace of better than 1.1 million so far, still below 1959, but seeming to catch up slowly. Certainly some housing leaders were very much encouraged: FHA Administrator Norman Mason said that "an increasing number" of areas are now reporting "adequate" funds available for mortgages. NAHB leaders, however, weren't that optimistic—their Mortgage Finance Committee reported finding few signs of any easing in the mortgage money situation.

Architectural Washington

In Washington itself, there were these developments of interest to architects:

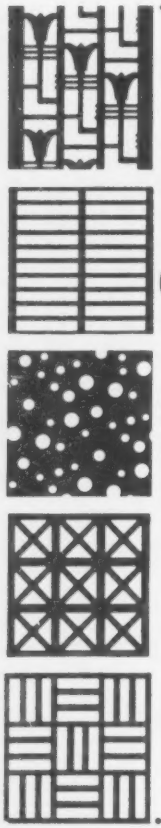
First, the costly joke that is the Senate's $25-millions new office building will cost still another half-million, if Senators put in elevators for their own use. Problem is that elevators at the center of the block-long building—built for a wing that was cut out of the original plan—carry less than 5 percent of total traffic. Senators rushing from their office to the Capitol have had to stand in line, crowd in with tourists.

Secondly, somewhat bloody, but certainly unbowed, the Commission of Fine Arts marked its 50th year of operation in the defense of the original concept of the Capital City. Most famous of its recent battles have been those against further encroachment by automobile routes—in favor of subways, or other forms of mass transit that won't destroy the city.

Third, George Washington University announced the first step in a long-range plan for redeveloping some five square blocks into an integrated campus in the city's downtown area. First structure would be a 100-bed addition to the University's hospital, to cost more than $3 millions.

Fourth, Congress considered a plan to create a seven-man commission on Presidential office space, to supervise tearing down of the old War-State-Navy building and construction of a new building on the site, just east of the White House.

Fifth, the Washington Junior Chamber of Commerce unveiled for the public a concept for a "Metro Center" that might be realized by the year 2000. Plan was developed by a Columbia University class in Urban Renewal, contemplates a complete change in the business heart of the city, and in a six-square-mile area surrounding it. Heading up the Jaycee committee was Stuart A. Werner, AIA.



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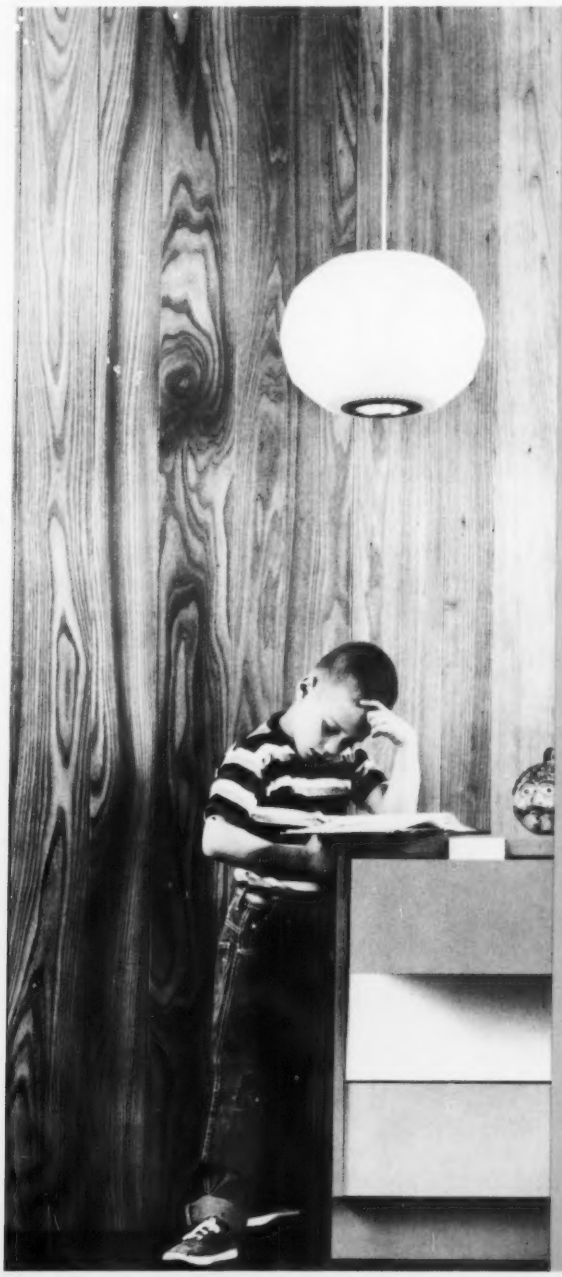

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Adirondack Birch,
Natural Oak,
Flame Gum,
Pecan

FAMILY-PROOF HARDWOOD PANELING—The finest grade hardwood paneling, with exclusive Family-Proof Finish. Adds rich, mellow beauty to every room—saleability to every home!

Saves "on-the-job" finishing costs . . . faster job completions, no finishing messes. Super-tough surfaces cannot be duplicated on the job.

Costs less through the years . . . No replacing, painting, papering. Guaranteed for the life of the home.

EXCLUSIVE FAMILY-PROOF FINISH—This tougher, more resistant finish is the most protective ever developed! Baked-on catalyzed resin produces an impregnable, fine-furniture surface that enhances beauty of the natural wood. Looks like hand-rubbed wax . . . yet defies scuffs, scratches, crayons, lipstick, paint, alcohol, household chemicals, grease, most common stains, turpentine, ink, cleaning fluid—even boiling water! Smudges simply wipe clean.

A COMPLETE LINE OF WOODS, COLORS, TEXTURES. . .

COTTAGE PANELING—Hardwood at medium price. Beautifully displays the natural growth characteristics of the wood. Family-Proof Finish. Lifetime guarantee. Oak, Walnut, Elm or Birch. Birch now available in Natural, Cherry-tone, Greytone, Mapletone and Antique.

GRAIN PLY PANELING—Popular-priced hardwood! Exclusive graining process produces realistic color tones and grain patterns. Available with Family-Proof Finish. Oak, or exclusive Teak—in a wide variety of pleasing colors.

All G-P factory-finished plywood paneling in 4′x8′ random-width V-grooved panels.

FACTORY-COATED STRIATED—Only G-P Striated comes pre-painted at no extra cost. Finish suitable for exteriors or interiors—or serves as base coat. Saves time, on-the-job painting costs. Backs are grooved to balance striated face, resist warping. In 4′x8′, 4′x10′ panels; 12″ and 16″ squares.

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Adhesive Permanently Joins Wet, Cured Concrete

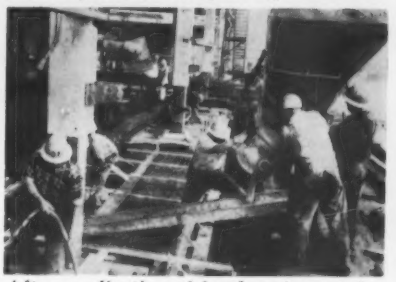
NEW YORK, N.Y. A combination of polysulfide liquid polymer and epoxy resin, mixed with a curing agent, has been found to create a permanent adhesive bond between fresh, wet concrete and cured concrete. The bond exceeds the tensile strength, flexural strength, and impact resistance of concrete itself. The adhesive will effectively join old concrete to old, and also glass, metal, wood, and plaster. It can be used as a mortar for patching and grouting when mixed with sand. Pictures show product used in making watertight repair.

The combination so far has been used for a number of purposes: in repairing spalled and scaled pavement, enabling new concrete overlays over old concrete; in construction for bonding new concrete additions to existing concrete structures; for skidproofing portland cement or bituminous concrete pavement, decks, and floors (both sealing the surface and bonding an abrasive, skidproof surface such as aluminum oxide or silica sand); and as a grout (also with aggregate) for bonding bolts and dowels in concrete. Thiokol Chemical Corporation.

On Free Data Card, Circle **100**

Fire at under-construction marine terminal damaged concrete pile caps.

Spray-on adhesive created a watertight bond between new, old concrete.



After application of bond, wet concrete was poured directly over old.

SPEC CHANGES PROPOSED FOR REINFORCED GLASS-FABRIC POLYESTERS

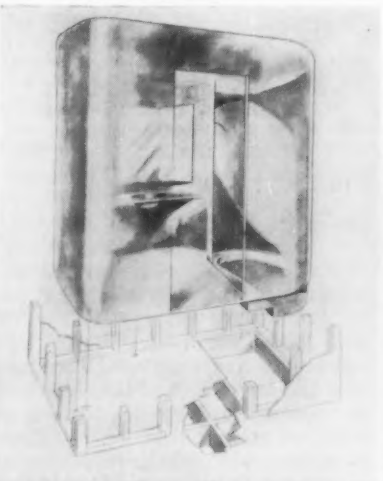
LOS ALTOS, CALIF. A manufacturer of seamless showers, vanities, and tubs made of reinforced glass-fabric polyesters has proposed a set of specifications to FHA to improve selection of products made from such materials.

Following release by U. S. Department of Commerce last year of Commercial Standard CS 222-59, "Gel-Coated Glass-Fiber-Reinforced Polyester Resin Shower Receptors," the Glaceramic Division of Dudley Industrial Corporation considered that qualifications and tests for the material should be spelled out in a more concise manner. The company also has manufactured glass-fiber-reinforced aviation and marine forms.

Dudley feels that the structure of the laminate is important to specifiers. It uses "a sandwiched laminate of several layers of heavy gage Volan finished, lock woven Trevarno Glass Fabric . . . . No chopping of random glass or fluff would be considered 'suitable' [for] the building professional."

Of particular emphasis in the series of tests and evaluations proposed in the specifications data are those for impact strength, cracking and crazing, surface abrasion, general strength, and adequate inspection during production. As a safety factor, a non-skid element is suggested.

Recent tests comparing glass-fiber cloth and spray layup shower pans indicated the former's superior strength and uniform thickness.



Flanges of installations are secured to studs, slotted for adjacent walls.

A representative of Dudley states, apropos the FHA proposal, that "it is our understanding that the FHA will endeavor to see that the necessary safeguards will soon be written in." Glaceramic Products Division, Dudley Industrial Corporation.

On Free Data Card, Circle **101**

One-piece, formed, seamless shower, lavatory units before installation.

Spray Coating Resists Deterioration, Fire

"Tonecrete," a durable, decorative spray-film coating, offers numerous advantages and uses. Coating can be applied over such interior or exterior surfaces as brick, masonry, poured concrete, stucco, tile, or previously painted or coated surfaces, resulting in a continuous, unbroken film. Due

to high inorganic content, Tonecrete does not suffer from deteriorating effects of oxidation and weather exposure. It is a breathing film, provides insulating protection, is washable, and is fire resistant (up to 1600 F). One coat of Tonecrete is said to be seven times as thick as one coat of ordinary paint. Available in full range of colors and textures. Desco International Association.

On Free Data Card, Circle **102**

Expanded Metals Have New Patterns

Two new patterns—Cathedral and Min-X—are announced in line of decorative expanded metals. Mesh sizes ranging from ½" to 4" openings give scale appropriate to exterior or interior use. Surfaces can be finished in color, giving added decorative value and weather protection. Applications suggested are exterior sunshading, resurfacing of old buildings, and patio privacy partitions; interior room dividers, screens and cabinet grills. United States Gypsum Company.

On Free Data Card, Circle **103**

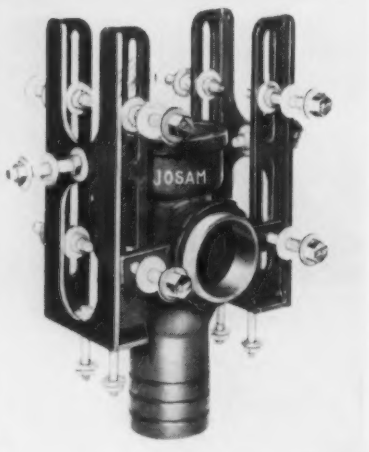
Asphalt Emulsion Contains Aluminum

Asphalt emulsion containing aluminum provides a highly protective, reflective, and decorative coating for exposed surface areas, such as roofs and bridges. It will not flow in hot weather, stain or crack. "Aluminized Static" is an improvement over company's "Static," and gives same long-lasting weather resistance plus reflective and esthetic qualities of aluminum. The Flintkote Company.

On Free Data Card, Circle **104**

Compact Closet Carriers For Back-to-Back Baths

New residential closet carriers are specifically designed for economical back-to-back installation of any manufacturer's fixtures. Carrier and fitting



can be located in standard plumbing-wall construction, whether studding is 2 x 6 or 2 x 8; and can be located within standard center-to-center dimensions of studding. Rather than being solely wall-supported, carrier is 90% floor-supported, and only steadied by the wall. T-shaped design of the feet gives the necessary strength with minimum weight. Josam Manufacturing Company.

On Free Data Card, Circle **105**

Plastic Floor Tile In Thin Gages

"Vina-Lux" 800 Series vinyl-asbestos floor tile is now available in 1/16" and 3/32", as well as 1/8" gages. The two new gages are desirable for light commercial and residential floor markets and are offered at the same price as regular vinyl-asbestos tile. Available in 6 color-chip styles, 800 Series is greaseproof, alkali resistant and economical to maintain. Uvalde Rock Asphalt Company.

On Free Data Card, Circle **106**

Insulating Concrete Produces Accurate Density

Density of Betocel cellular lightweight insulating concrete is variable from 20-70 lbs/cu ft and can be controlled within 10 percent tolerances. Accurate control is due to the products' composition of four components—Portland cement, normal sand, ordinary water, and Betocel emulsion—which are mechanically mixed in a special machine at the site. Mix consists of millions of tiny non-connecting plastic-lined air cells, giving high insulating efficiency. Reflectal Corp., subsidiary of Borg-Warner Corp.

On Free Data Card, Circle **107**

Swimming Pool Has Half Cost, Double Use

A revolutionary, low-cost swimming pool, invented by the same man who developed the iron lung, will soon be available on a nationwide basis. Pool has ribbed-steel sidewalls that combine vertical strength with horizontal flexibility and enable pool to withstand stresses of freezing and thawing. Result is an all-weather pool that can serve as an ice-skating rink during winter.

Partly-constructed pool (shown) has heavy net of reinforcing steel at

bottom of pool, which will be covered with thick coat of concrete, locking sidewalls in solid concrete. Pool can be installed by ordinary construction methods, rather than specialized pool techniques, further reducing costs. (It is claimed that a modest residential pool can be installed for as little as $2000.) Since unique wall construction is the greatest economy over conventional methods, the larger the pool, the greater the savings. Flexibility of the prefabricated sidewall panels permits any shape of pool. Coraloc Industries, Inc.

On Free Data Card, Circle **108**

Advanced Audio System From Swedish Royalty

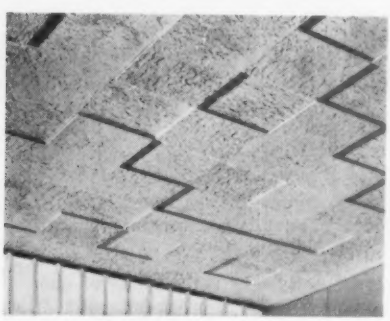
With a highly-styled enclosure designed by Sigvard Bernadotte, son of the King of Sweden, the most advanced speaker system in Europe has been recently introduced to the United States. "Lund 1001" has matched

speakers and power amplifiers integrated into a new concept in high-fidelity furniture design. Speaker enclosure is functionally designed to give utmost performance in faithful sound reproduction. Photo shows four units grouped for stereophonic reproduction. Elektron Lund AB.

On Free Data Card, Circle **109**

Stop-Look-and-Listen Ceiling Possibilities

Variety of design in acoustical ceilings is made possible with two new tile products. Shown above is "Profile Acoustone" (12″x12″), manufactured with two kerf planes instead of one.



Adjacent tiles are held by splines that fit into the kerfs, with varied designs achieved by using alternating kerfs. "Accent Acoustone" (12″x24″), presents another new look—a broadly accented joint—with rabbeted edges that butt together instead of interlocking. United States Gypsum Company.

On Free Data Card, Circle **110**

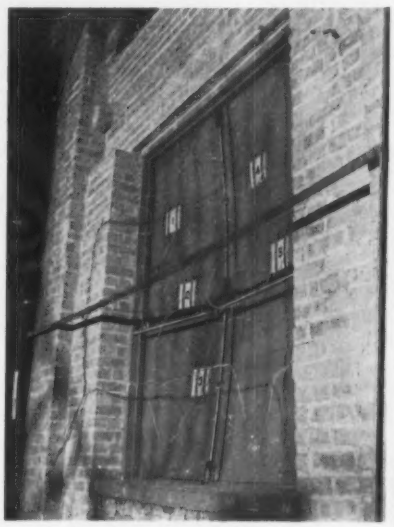
Vinyl Wall Covering Resembles Suede

Newest vinyl wall-covering pattern in the "Koroseal" line is "Mojave," a flat non-reflective finish resembling suede. The fabric-backed pattern meets flame-retarding requirements and is available in 39 colors. B. F. Goodrich Company.

On Free Data Card, Circle **111**

Exit and Panic Hardware Passes Severe Tests

Having passed three-hour fire tests in Underwriters' Laboratory, vertical-rod exit devices for fire doors become



first ever to be listed by UL for both fire and panic. Hardware's mortise device was first fire-approved hardware to meet all requirements of UL panic test. In two separate three-hour fire tests, Sargent devices remained securely fastened despite "bowing" of doors by up to 1925 F heat (see picture). New exit hardware may now be specified for both "A" openings (where hardware on fire walls must be applied by manufacturer) and "B" openings (where it may be applied at job site). Doors developed for new hardware were designed by Overly Manufacturing Company. Sargent & Company.

On Free Data Card, Circle **112**

Baseboard Is Small and Inconspicuous

Dimensions of new hydronic-baseboard line are 7½″ in height and 2⅝″ in depth; when installed against studding, baseboard projects a scant 1½″ from wall. Another important innovation of "F" model is box-type aluminum-fin structure, which is sturdy enough to support a man's weight and which increases heat-transfer surface by providing individual flues throughout length of element. Fedders Corporation.

On Free Data Card, Circle **113**

System Precontrols Light Intensities

All-automatic preset punch card system for control of light intensities in theaters, auditoriums, etc., eliminates all manual operations after proper initial lighting conditions have been set. Allows speedy setting of desired sequence of lighting conditions, with an unlimited number of presets, compared with ten formerly possible. "Punch" system consists of three electrically operated units (manual console, card punching and reading machine) which instantaneously feed correct lighting circuit values for a given cue to lighting system; read-out device built into console enables operator to read value cards. In emergency, any or all circuits can be manually controlled by operator. Century Lighting, Inc.

On Free Data Card, Circle **114**

Cube-Shaped Chair Of Stainless Steel, Calf

Striking new lounge chair has dimensions of a cube—28″ x 28″ x 28″. Frame is highly-polished stainless

steel; upholstery is hand-sewn calfskin in brown or black. Nicos Zographos, the designer, suggests the chair for office, reception, and public areas. Contract Furniture Division, Albano Company Inc.

On Free Data Card, Circle **115**

Continued on page 84

Even 140 mph winds can't

WEATHERBAN®

BRAND SEALER

When Mother Nature goes on the rampage, curtain wall sealers have got to take it. At those times, buildings with conventional caulking compounds can literally come apart at the seams.

But not so when you use WEATHERBAN Sealer based on polysulfide rubber. It adheres strongly, cures without shrinkage to a durable, solid rubber seal that flexes, stretches, compresses with wall movement. Even winds of 140 mph can't break the seal. WEATHERBAN Sealer also cushions glass areas against breaks and cracks, resists torrential rains and other weather factors for years without losing its seal of flexibility.

That's why WEATHERBAN Sealer is the preferred choice to seal new buildings or to replace worn-out conventional sealers. Its three colors—aluminum, black, off-white—give you the variety of choice required for any glass, stone or metal installation.

You can build greater durability and strength into your constructions with 3M Adhesives, Coatings and Sealers. For further information, see Sweet's Catalog. For free literature, see your 3M Distributor, or write: AC&S Division, 3M Company, Dept. SBC-70, St. Paul 6, Minn.

News about other 3M products

EASY DOES IT when you bond with 3M Vinyl and Rubber Tile Adhesive. This water-dispersed, heavy bodied adhesive remains flexible when dry, it is tough enough for use on radiant-heated floors, and on other floors that are above grade. 5 to 20 minutes open time speeds you through work.

NO WARPING OR PEELING when you bond sink and countertop laminates with ROLTITE® Brand Contact Cement. Simply coat both surfaces, let dry, position laminate, then hand roll to finish the bond. Highly water resistant. Exceptionally high bond strength.

break the seal!

VIBRATION-DAMPENER. Rubber-based Duct Sealer 800 seals heating and air conditioning ducts, dampens vibrations, can be stretched twice its length before breaking when dry. Sets up firmly at duct joints; won't flow out under pressure. Can be readily applied with brush, flow gun or putty knife.

"WEATHERBAN" and "ROLTITE" are Reg. T.M.'s of 3M Co.

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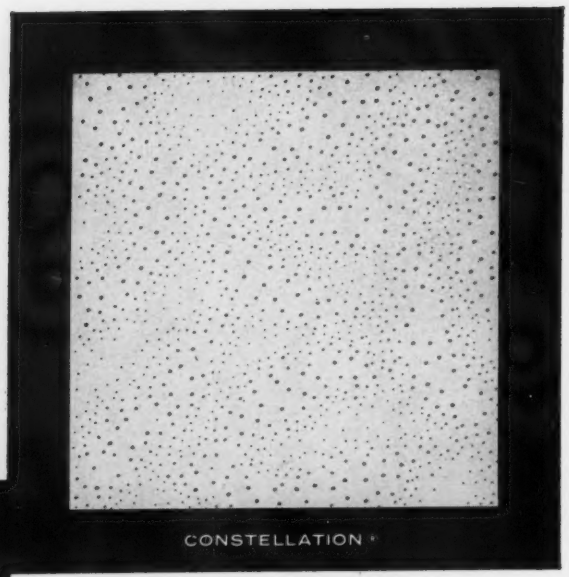
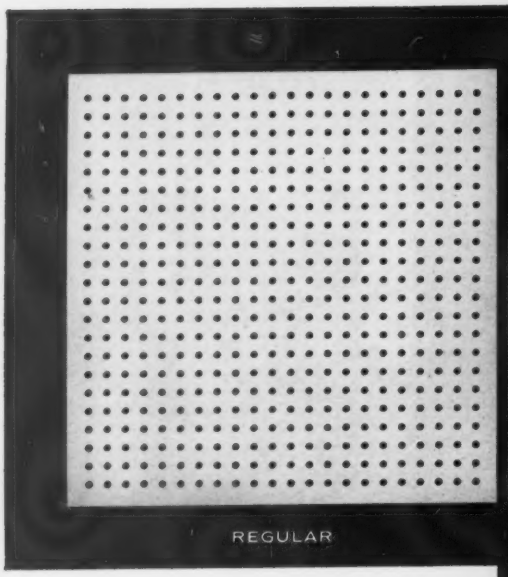
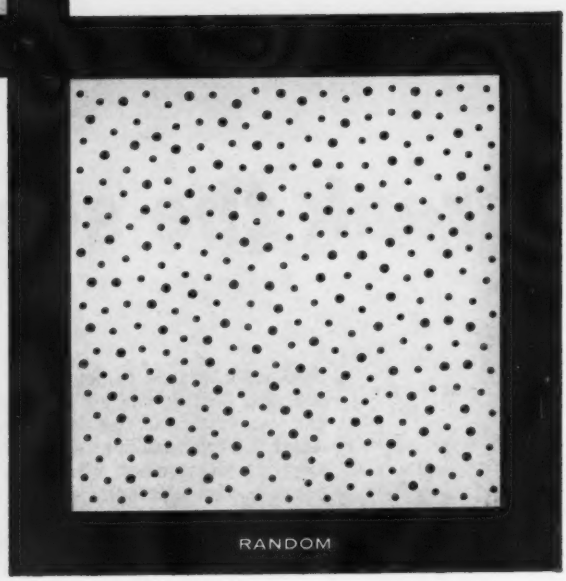




Beauty that endures...



"Horse with Saddle," a glazed Terra Cotta tomb figure now in the collection of the Minneapolis Institute of Art. Its beauty has endured since the T'ang dynasty, 618-906 A.D.

with Lo-Tone® mineral tile

■Years from now, you will be showing prospects the jobs that are only plans on your drawing board today. The total effect could be marred by acoustical tile that "showed its age." ■Lo-Tone mineral tile is carefully designed to stand up through the years—and always look good. Surfaces are double-coated to stay bright and retain the maximum amount of light reflection. All holes are cleanly drilled; corners are square; and kerfs are accurately placed so that joints remain practically invisible. ■Look to the future . . . and specify Lo-Tone today. Available in 12 x 12 tiles and 24 x 24 or 24 x 48 Constellation ceiling boards. Nu-Wood® also gives you enduring beauty in economical cellulose fiber tiles. See Sweet's Architectural File for noise reduction coefficients and short form specifications on both tiles. ■ For additional AIA file folders and samples of Nu-Wood and Lo-Tone tiles, write Wood Conversion Company, St. Paul 1, Minnesota.

For enduring beauty, specify . . .

LO-TONE® MINERAL TILE

NU-WOOD® CELLULOSE FIBER TILE

Tile Has Integral Sound Conditioning

With "SCR Acoustile"™ ceramic, glazed, structural, facing tile, it is possible to build, finish, and sound condition a wall in a single operation. This unique product is obtained by perforating the face of each tile with ¼" holes (in random or parallel pattern) and concealing a pad of Fiberglas within the tile. Combined with the new advantage of acoustical properties (sound-absorption factor of 65% and sound-transmission loss of 47 db) are customary features of compressive strength, fire resistance, permanent finish, and easy maintenance. Idea is a recent development of the Structural Clay Products Research Foundation. Metropolitan Brick, Inc.

On Free Data Card, Circle **116**

Asbestos-Cement Sheet Bends with Ease

Unique asbestos-cement structural sheet can be bent into a circle as small as 18" in diameter. The fireproof sheet can also be nailed or stapled within ¼" of an edge, and can be cut with an ordinary handsaw.

"Kamwall" is supplied in thicknesses of 1/8", 3/16", and 1/4", in standard 4' x 8' panels. Sheet conforms well to irregular surfaces, permitting unusual effects in soffits, interior partitions, etc. Flexibility also minimizes breakage in shipment and handling. Like conventional asbestos-cement products, Kamwall is heatproof up to 500 F, rotproof, and verminproof. Keasbey & Mattison Company.

On Free Data Card, Circle **117**

"Soft Look" Line of Fixtures Introduced

Lighting fixtures derive "soft look" from use of opal-glass globes having an etched finish. Eight basic shapes are available for surface-mounting, handling, and wall-mounting. Stems are metal or flexible wire support. Ornamental caps come in oil-finished walnut, or metal in black, white, or a number of colors. Prices range from $21 to $45, and vary according to quantity, finish, detailing, etc. Harry Gitlin.

On Free Data Card, Circle **118**

Ceramic Material Transmits Light

Revolutionary ceramic material has composition of ceramic, structure of metal, and light-transmitting ability approaching glass. "Lucalox" is made from powdered aluminum oxide, but microscopic pores usually found in ceramic materials are removed, producing an almost-transparent material. High strength is combined with ease of fabrication into any desired shape. One of many likely applications is in high-temperature lamps, since Lucalox is stable at temperatures close to 3600 F. General Electric Company.

On Free Data Card, Circle **119**

Distribution Center Is Smaller, Quieter

Integral distribution center with high-temperature insulation is up to 30% smaller, 15% lighter than previous designs, and 16 decibels quieter than NEMA standards for transformers of similar ratings. New one-piece design combines into an integral unit all three sections necessary for load center application: incoming lines switch and fusing, transformer, and outgoing feeder breakers. Suitable for industrial plants, hospitals, schools, offices, warehouses and commercial buildings. General Electric Company.

On Free Data Card, Circle **120**

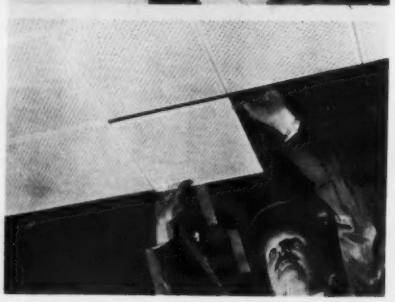
PVC Waterstops Offer Advantages

Waterstops manufactured by extrusion process from a special elastomeric plastic compound of polyvinyl chloride, assure watertight expansion and construction joints in concrete. "PVC Waterstops" have substantial advantages over rubber because of greater age resistance, easier splicing, simpler storage requirements on the site. Lexsuco Inc.

On Free Data Card, Circle **121**

Two Installation Methods For Acoustical Panel

New sound-control panel is reported to be the only metal-faced acoustical tile that can be either cemented in place or installed by concealed sus-



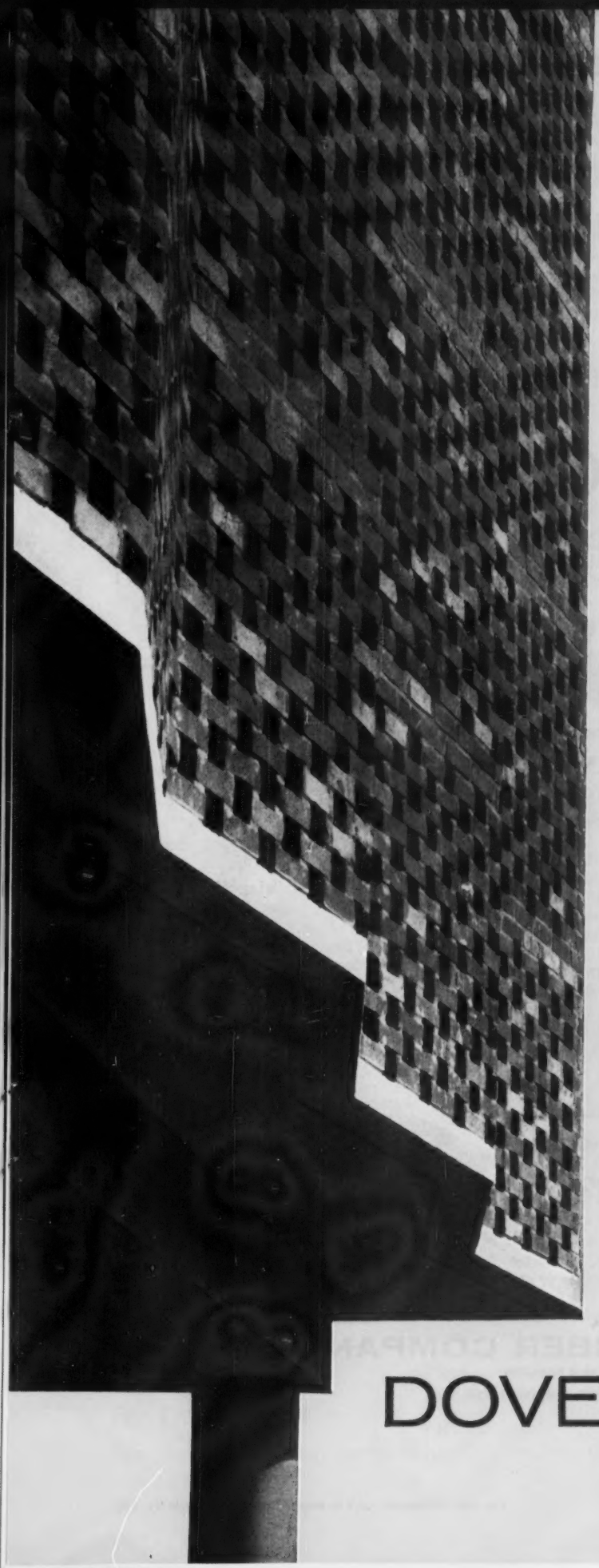
pension system. "Solo-Tile" is an incombustible combination of perlite particles and mineral binders (for the base material) and thin-gage aluminum (for the facing). White baked-enamel finish assures an easily cleaned surface. Two patterns are available —random-bold and regular-diagonal. Johns-Manville Corporation.

On Free Data Card, Circle **122**

Aluminum Window Needs No Exterior Trim

Low-cost horizontal slide window has fin trim as integral part of aluminum frame, eliminating need for outside wood trim. "Series 700" also features mitered and welded corners for extra rigidity. Vent sections are of extruded aluminum, slide channels are of stainless steel, weather-stripping is of vinyl. Truscon Division, Republic Steel Corporation.

On Free Data Card, Circle **123**



Attention to detail

Careful architectural detailing results in the much-admired articulated design. This attention to detail applies in the manufacture of machinery, too. Years ago the people of Dover's Electric Elevator Division (formerly The Shepard Elevator Division) took a long, hard look at the accepted method of making a worm gear assembly, "heart" of traction elevator machines. They found it could be improved . . . made more uniform and thus reduce wear and vibration in the elevator machine. The result: a worm and gear unequalled for precision in the elevator industry. For building owners this means better elevator performance, less maintenance, longer life. Give your clients the benefit of this attention to detail by inviting a Dover Elevator bid on your next job.

DOVER CORPORATION
Electric Elevator Division
5051 Brotherton Road, Cincinnati, 9, Ohio

DOVER Elevators

Fine elevators since 1861

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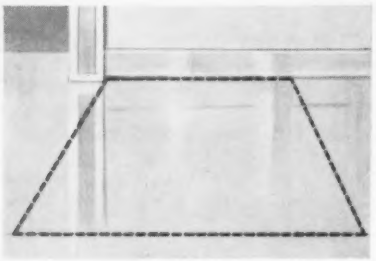


FIGURE 1

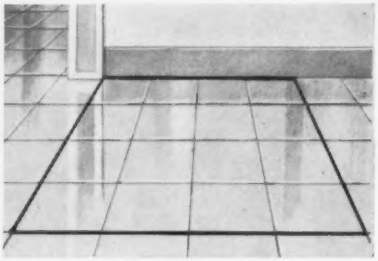


FIGURE 2

If you were a "staph" germ, where would you hide?

. . . in any crack where germs can harbor and multiply. There are 32 times as many potential hiding places in a 9″ x 9″ tile floor (Figure 2) as in a square yard of *sheet rubber flooring* (Figure 1).

Sheet rubber, installed by overlapping and cutting through to the underside sheet, gives much tighter joints than tiles can possibly offer.

Architects and hospital authorities recognize rubber as the truly appropriate institutional floor. By combining the proven features of rubber (quietness and comfort underfoot) with the sanitary features of *sheet rubber*, you then approach resilient flooring perfection.

WALL-FLEX® (rubber wall covering) by The R.C.A. Rubber Company is discouraging to germs, too, and offers the same advantages, plus subtle color harmony.

This ideal combination is a real "staph" fighter.

Consider the initial cost, design, comfort, long wear, quietness, sanitation, maintenance . . . then take a fresh look at The R.C.A. Rubber Company's rubber floors and Wall-Flex next time you are selecting interior finishes.

The largest manufacturer of sheet rubber for the flooring industry.

THE R.C.A. RUBBER COMPANY

An Ohio Corporation of Akron, Ohio

1833 EAST MARKET ST., AKRON 5, OHIO

For more information, turn to Reader Service card, circle No. 316

AIR/TEMPERATURE

Air-Diffusion Catalog Wins National Award

The Producers' Council has awarded a Certificate of Merit in its 1960 competition to this comprehensive air-diffusion equipment catalog. The award, presented at the AIA convention in San Francisco, was made for "an outstanding effort in the production of informative, high quality product literature." Catalog, 58 pages, contains complete application and specification data on return and supply registers, extruded-aluminum "Airline" grills, removable-core grills, volume-control dampers, and door ventilators. Each type of unit is well illustrated and keyed in color for quick reference. Waterloo Register Company, Inc.

On Free Data Card, Circle **200**

Manual Gives Principles Of Hydronics Heating

Extensive *Hydronics Heating Manual* —with 150 pages on residential, commercial, and industrial applications —is now available. Manual covers

such subjects as basic hydronics principles, boiler sizing, system design, boiler replacement, piping, boiler installation and operation, controls, and performance. Full specifications included. Permaglas Division, A. O. Smith Corporation.

On Free Data Card, Circle **201**

Cost Estimates For Electric Heat

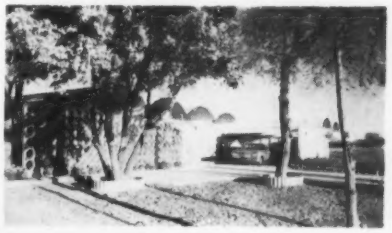
New booklet, providing estimated costs for electric heat in 105 major cities, has been issued. In addition to an installation-cost worksheet, 12-page booklet gives an outline of a typical small home, showing where heaters should be placed for greatest efficiency. Also included are insulation recommendations, heating needs for typical room sizes, and specifications. Sun-Tron Corporation.

On Free Data Card, Circle **202**

CONSTRUCTION

Experimental House Presented in Quarterly

Asbestos-Cement Quarterly devotes its full 20 pages to a presentation of Asbestos-Cement Research House, designed for the *Living for Young Homemakers* Basic Materials Research & Design Program. Brief articles discuss use of standard as-



bestos-cement materials in creating novel design effects; design of the unusual vaulted roof; problems of sandwich-panel construction; possibilities of erecting all walls of an average home in a single day. A biography of the architect, R. Duane Connor, is included, as are many photographs taken during construction and on completion of the house. Asbestos-Cement Products Association.

On Free Data Card, Circle **203**

Extensive Catalog of Testing Equipment

Largest catalog in company's history contains 316 pages of engineering testing equipment, and describes over 3400 different items. Products vary from a pocket-sized soil penetrometer to completely-equipped mobile laboratories and nuclear testing apparatus. Catalog includes all major equipment and accessories for testing soils, concrete, aggregate, and bituminous materials; for drilling and sampling. Soiltest, Inc.

On Free Data Card, Circle **204**

Fire-Resistant Tile Absorbs Sound

Report of Underwriters' Laboratories, Inc., grants 4-hour fire-resistance rating to acoustical tile ceiling system. Acoustical Fire-Guard, when combined with cellular steel deck and 2½" concrete floor assembly prevents flame passage and heat transmission, affords enough protection to structural "I" beams to permit them to carry their prescribed loads for more than five hours in a fire. System is installed by "dry" method, eliminates construction delays as result of "wet work"—requires no intermediate fire-stop, serves as protection membrane for floor structure above. Report includes description of ceiling system composition, which has .70 noise reduction coefficient. Tiles are available in Fissured, Full Random, Classic design. Photographs, diagrammatic drawings, charts, are included. Armstrong Cork Company.

On Free Data Card, Circle **205**

Sources of Building Products and Services

Booklet helps locate and identify various available building products and services. It lists—by divisions—products, sales offices, and trade marks. Simple key-lettering system locates nearest source for all materials. United States Steel Corporation.

On Free Data Card, Circle **206**

Metal Buildings Of High Quality

Recommended Design Practices Manual, the result of two years' study by leading engineers in the metal-building industry, is now available. Sections of the 28-page manual discuss dead and live loads; wind, crane, and earthquake loads; deflection limitations; aluminum panels; plastic panels. Examples of wind loads on typical metal-building shapes are solved. Metal Building Manufacturers Association.

On Free Data Card, Circle **207**

Modular Lumber Panels Described by Association

New technical publication describes "Sheet-Board," a modular panel made of standard-thickness sawn lumber

that is glue-bonded side by side between sheets of heavy kraft paper. The finished product enhances lumber's strength, and serves many uses in roof, floor, and side-wall sheathing. Four companies are presently manufacturing the product; coast-to-coast distribution is being developed. Folder, 6 pages, gives facts on strength, weatherability, economy, insulation, workability, and quality control. Western Pine Association.

On Free Data Card, Circle **208**

Plans Published for Five Fallout Shelters

Complete plans for the construction of five residential fallout shelters are included in the recently-published 16-page *Clay Masonry Family Fallout Shelters.* Shelters are of brick and structural tile, and can be built in or near the home. Plans include a basement shelter in an existing home,

a basement shelter in new home construction, an underground shelter, and two aboveground shelters. In addition to fallout protection, the five shelters also provide refuge from natural disasters such as tornadoes and hurricanes. Booklet has been reviewed by the Office of Civil & Defense Mobilization, which found it to meet OCDM standards for effective shelter. Structural Clay Products Institute.

On Free Data Card, Circle **209**

Decorative Treatments With Porcelain Enamel

Several new developments in porcelain-enamel panels are featured in 12-page 1960 catalog. Of particular interest are "Sculpturama" panels, whereby embossed designs of the architect's choice are formed and fired into the panel in a wide range of colors. Decorative panels and murals designed by Edward Winter are also available. Other products mentioned in the brochure are a special window surround of porcelain enamel on steel, several types of facing panels, and a gravel-stop fascia in architectural porcelain. Typical trim and opening details for panels are given. Davidson Enamel Products, Inc.

On Free Data Card, Circle **210**

New Standard on Heavy-Timber Framing

A new standard, *Section 1000: Heavy Timber Construction Definition,* has been issued as the latest chapter in AITC's Timber Construction Standards. Section supersedes old definitions which did not recognize contemporary structural forms of heavy-timber construction. Undertaken at specific request of prominent building-code officials, the 2-page definition encompasses years of experience with fire-safe timber construction materials. American Institute of Timber Construction.

On Free Data Card Circle **211**

DOORS/WINDOWS

Steel Rolling Doors Suit Many Installations

Complete line of all-steel rolling doors is presented in 20-page catalog. General service doors are available in 4 types of operation—power, crank, chain, and push-up. Fire doors, giving ordinary service as normal doors, also have up to 3-hour rating. "Pygmee" doors are suitable for pass windows, and indoor or outdoor concessions. Details show various methods of mounting doors, and indicate critical dimensions. Doors save space by coiling into compact, overhead units. Manufacturer offers complete planning service without obligation: preliminary sketches will be returned with details, clearances, and specifications for all rolling doors. Walter Balfour & Company, Inc.

On Free Data Card, Circle **212**

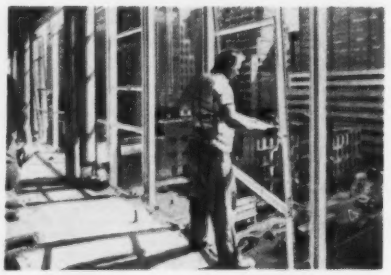
Double Window Unit Softens Sound

Window combination provides solution to noise problems, and is well suited for use in hotel rooms in busy city areas or near local airports. Sound and vibration absorbtion is accomplished by installing two windows, cushioned in heavy neoprene gaskets. Both windows are vented, assuring ease of cleaning and comply with local ordinances requiring vented windows. Ware Laboratories Inc.

On Free Data Card, Circle **213**

Scale Details for Aluminum Curtain Walls

Lupton Aluminum Curtain Wall offers 72 detail sheets for "Type H" curtain-wall system. A "façade" sheet in the introductory pages serves as a visual index to the desired information, which is grouped according to func-



tion (head, sill, jamb, etc.). Many sections are shown full size; all are conveniently scaled for tracing. Several pages show details for "Comfort Conditioning" curtain-wall system, which integrates cooling, heating, and ventilating with motel walls. Michael Flynn Manufacturing Company.

On Free Data Card, Circle **214**

ELECTRICAL EQUIPMENT

Revised Standards For Industrial Lighting

RLM Institute (for Reflector and Lighting Equipment Manufacturers) has issued new 52-page standard specifications for industrial lighting equipment covering 17 basic types of most widely used fluorescent and incandescent units. Each standard discusses materials, construction of components, lighting characteristics, acceptance criterion, and National Electrical Code Requirements. Significance of RLM label, granted after periodic random inspection, is fully described. RLM Standards Institute.

On Free Data Card, Circle **215**

Light and Air Integrated Into Single Diffuser

Comfort Conditioning with Light and Air describes a combination light and

air diffuser that gives highest comfort with flexibility and handsome appearance. Booklet, 24 pages, gives data for selection of illumination levels, and formula for determining number of fixtures required. Air-distribution data show maximum cfm that can be supplied through one combination diffuser for various ceiling heights and temperature differentials. Much additional information is supplied. Day-Brite Lighting, Inc.; Barber-Colman Company.

On Free Data Card, Circle **216**

Floodlight Types and Applications

Pocket-sized edition of floodlight catalog presents material on selection of floodlights, types of floodlights (general purpose, heavy duty, mercury vapor, and special), lighting for hazardous and underwater locations, searchlights, floodlight poles, and accessories. Each model has illumination data in addition to suggestions on installation and appropriate uses. Crouse-Hinds Company.

On Free Data Card, Circle **217**

Underfloor Systems For Power, Telephone

Underfloor-distribution systems for power, telephone, and intercom are outlined in 20-page *Bulletin 517*. Booklet describes standard and double-capacity duct and junction boxes for use in conventional concrete-slab construction, with lift slabs, and in other special types of floor construction. Square floor pans make access-box covers almost invisible on tile floors. Full line of service fittings is illustrated. Companion literature, 36 pages, gives engineering data necessary for layout of system. The National Supply Company.

On Free Data Card, Circle **218**

Lamps Magnify, or Give Combination of Light

Data sheets, each 2 pages, present "Illuminated Magnifier" and "Combo" lamps. Magnifier features large distortion-free magnification within ring of fluorescent tube; Combo unites incandescent and fluorescent light for

comfortable, bright illumination. With famous spring-balanced action, lamps adjust easily to any position and maintain balance. Mounting is adaptable to table, bench, machine, wall, etc. Brackets, bases, and stands are illustrated. Luxo lamps were selected as one of "100 Best Designed Products" in recent *Fortune* survey. Luxo Lamp Corporation.

On Free Data Card, Circle **219**

Continued on page 94

INCINERATION
WITH
Air Pollution Control

MORSE BOULGER INC.

BUILDERS OF THE MOST MODERN INCINERATOR PLANTS IN THE WORLD

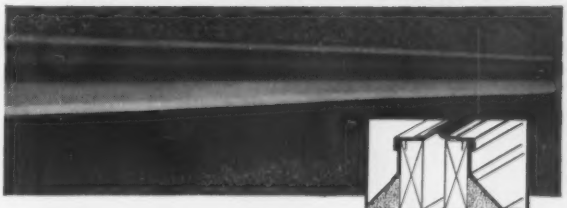
FREE
Incinerator Facts
☐ Municipal Bulletin 111-C
☐ Industrial Bulletin 184-A

Contact us, or have your architect or consulting engineer tap our 70 years experience solving Waste Disposal problems—large or small. No obligation.

MORSE BOULGER INC.
80 Fifth Avenue, New York 11, N. Y., Dept. 60B
REPRESENTATIVES EVERYWHERE
Member: Incinerator Institute of America, Air Pollution Control Assoc.

For more information, turn to Reader Service card, circle No. 317

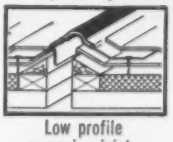
Solve Your EXPANSION JOINT Problems with *Expand-o-flash* with the NEOPRENE BELLOWS



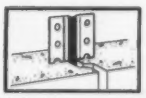
Curb roof expansion joint.

Expand-o-flash is made of weatherproof flexible neoprene, bonded mechanically and adhesively to metal edging and is installed with totally relaxed neoprene bellows to allow both sides of the joint to move freely in any direction. Stresses and metal fatigue are eliminated.

Expand-o-flash provides a continuous watertight seal all around the building both above and below grade.



Low profile expansion joint.

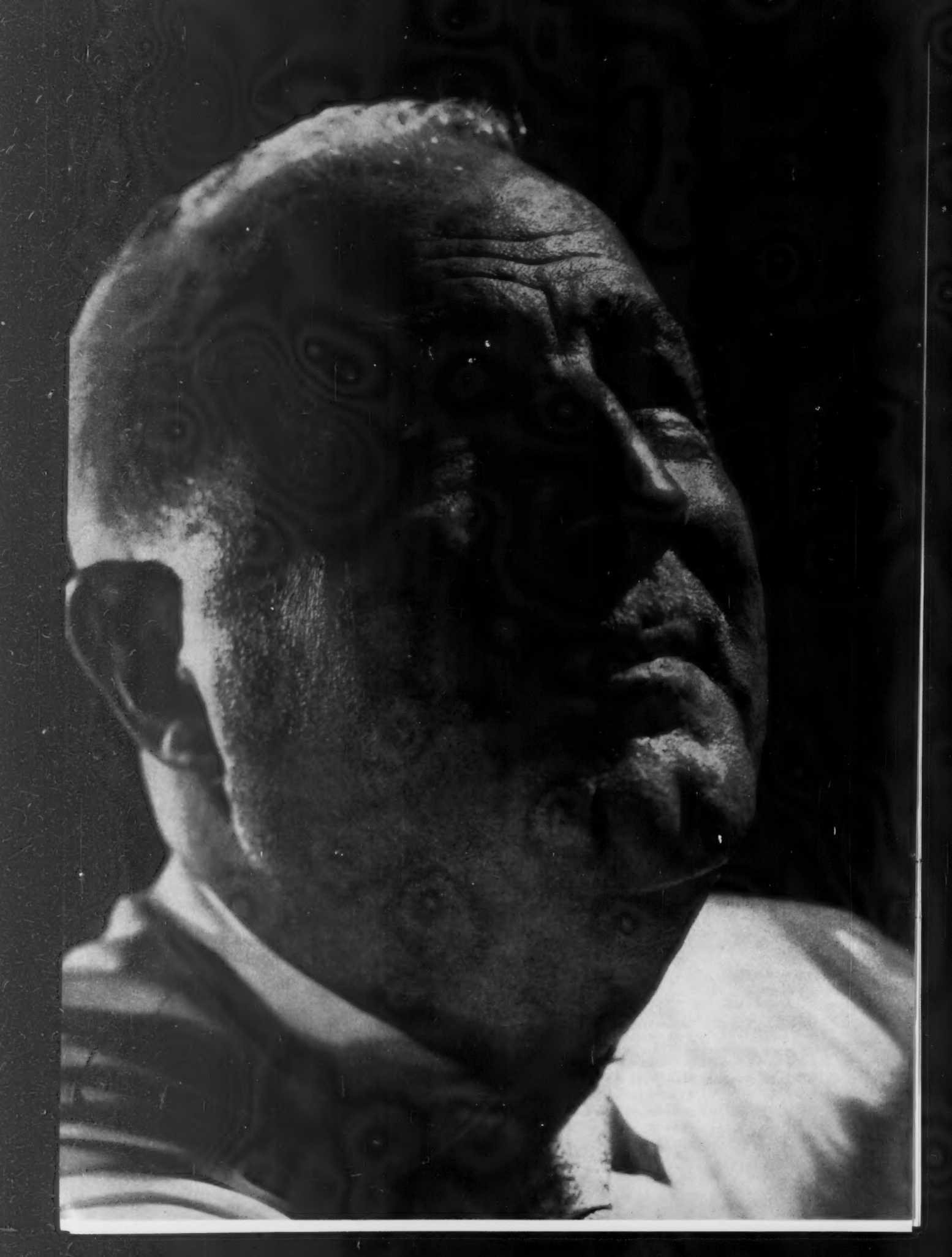


Expand-o-flash in vertical walls.

Shop fabricated corners and crossovers eliminate errors in the field and reduce the cost • No training needed for installation • Literature, engineering data and sample on request • See us in Sweet's.

L&R LAMONT & RILEY CO.
300 SOUTHWEST CUTOFF, WORCESTER 7, MASS.

For more information, turn to Reader Service card, circle No. 318



Clap your hands in the average room and listen . . . Do you hear a pronounced echo? . . . a distinct sound "flutter"? . . . or does the sound of your handclap seem to fade and die instantly? Each of these sound phenomena instantly signals a room in which poor acoustical balance frustrates sound intelligibility. Our purpose here is to tell you why—and what can now be done about it.

To hear and be heard in a room: Sound intelligibility is the only valid measure of satisfactory room acoustics. It depends entirely on achieving the proper balance of sound reverberation and sound diffusion in the room.

Let's take sound reverberation: Not all of the energy of sound in a room reaches a listener directly. That makes it necessary to have the room's surfaces reflect back portions of the original energy to reinforce the sound. The amount of reflection is critical. Too much—and the reverberation time increases to a point where echo, flutter and other confusions of the first sound occur. Too little—and the room is dead. Sound falls away at once.

And consider sound diffusion: When sound energy spreads through a room and rebounds from its surfaces, it creates a pattern of sound pressure throughout the room. A relatively uniform sound pressure pattern represents good diffusion—the second critical consideration in room acoustics. Improper diffusion of sound leads to poor efficiency of absorbing materials in the room—and to poor intelligibility.

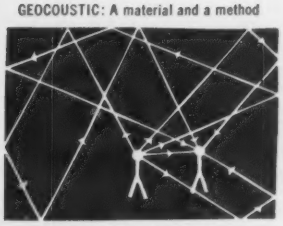
The problem of control: Sound absorption can control both important factors in room acoustics: reverberation time and diffusion. Reverberation time is controlled by the *amount* of absorption, diffusion by its *distribution*.

Present controls are only partial measures: Commonly used acoustical treatments rely entirely on a continuous mass of absorbing material placed on one surface of a room—generally to cover the ceiling. This reduces the probability of achieving good acoustical balance in a room. One reflective surface is eliminated completely and the others are not controlled at all. The room is acoustically lopsided. A handclap will reveal it every time.

The solution has long been known: The key is

(continued)

GEOCOUSTIC: A material and a method



. . . to hear and be heard in a room

pc

(continued from preceding pages)

placement of patches of absorption on a room's reflective surfaces to take advantage of the so-called area effect. The result is a balance between reflection and absorption that promotes controlled reinforcement of sound.

Orthodox acoustical treatment has made it virtually impossible to take advantage of the patch technique. Practical application of the patch technique requires higher unit absorption efficiency than commonly used acoustical materials provide. Thus, you have until now been unable to utilize the most effective means of achieving good acoustics in a room. *Now you can do something about it.*

Pittsburgh Corning announces

GEOCOUSTIC™

A material—cellular glass for high unit absorption

A method—distributed absorption to control *both* reverberation and diffusion

It all began ten years ago when PC's senior physicist questioned a published statement that cellular glass had no significant acoustical properties. His argument: open its normally closed cell structure to expose the intricate labyrinth of chambers within the material. Do this, he said, and cellular glass could be used as the first material to make practical the patch technique.

Now, that goal is a reality—with GEOCOUSTIC.

The secret of Geocoustic units lies in the rigidity and complete dimensional stability of the cellular glass from which they are made. These important physical qualities make it possible to penetrate *both* surfaces of the basic 13½" square x 2½" thick units . . . with perforations of precise diameter and depth to insure maximum absorption efficiency per unit.

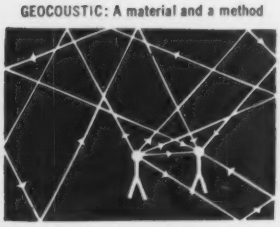
The result is over 2 full Sabins of absorption for every unit . . . and this extraordinary absorption opens up the hitherto impractical use of the patch technique. Now, full surface coverage is no longer needed.

The net effect is this: acoustical designs in which surprisingly few units distributed in a room achieve near perfect acoustical balance at costs often below those of standard treatments.

This, then, is the premise and the promise of Geocoustic . . . to hear and be heard in a room more clearly than ever before. Clap your hands in the Geocoustically treated room and hear that promise fulfilled.

We hope you will want a fuller explanation. If so, simply write for our new literature which describes in depth the theory and practice of patch absorption—and the remarkable new Geocoustic units which give them practical application. Address Pittsburgh Corning Corporation, Dept. AB-70, One Gateway Center, Pittsburgh 22, Pa.

GEOCOUSTIC: A material and a method



. . . to hear and be heard in a room

PC

For more information, turn to Reader Service card, circle No. 319

INSULATION

Insulating Sheathing Gives Economy, Comfort

Use of fiberboard insulating sheathing to provide year-round comfort is described in 12-page *Form 3070*. Advantages of insulating sheathing—bracing strength, high insulation value, and durability—are discussed in detail. Instructions are included for application of various exterior surfaces over insulating sheathing. A comprehensive chart compares economy and insulating efficiency of typical applications. The Celotex Corporation.

On Free Data Card, Circle **220**

New Values Designate Installed Insulation

An *All-Weather Comfort Standard* for air-conditioned and electrically-heated houses has been developed, incorporating the first performance standards ever written for *installed* insulation. The new method of describing and specifying insulation replaces older thickness and conductivity designations. An insulation material's "R" factor (for Installed Resistance) denotes the effect of the insulation in place, and includes adjacent air spaces and surfaces. A full definition of this factor, its method of calculation, and resistances of typical building sections are presented. Write: National Mineral Wool Association, 1270 Sixth Ave., New York 20, N. Y. ($.10).

SANITATION/PLUMBING

Water-Hammer Arrestors Of Advanced Design

Innovations in water-hammer arrestment are illustrated in new 6-page manual. New "Shoktrol" is entirely of stainless steel, for maximum corrosion-resistance to potable liquids on the inside, destructive atmospheric conditions on the outside. Available in wide variety of compact sizes for full protection against water hammer in all types of piping systems. Exclusive, newly-developed sizing method permits scientific selection of units for multiple-branch installations. Plumbing Products Division, Zurn Industries, Inc.

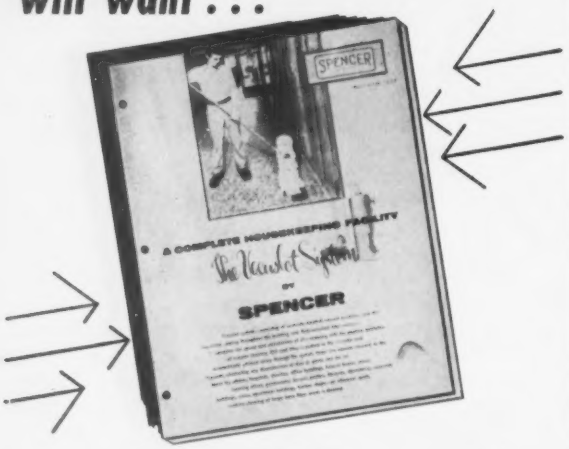
On Free Data Card, Circle **221**

Copper Tube and Fittings For Drainage/Waste/Vent

Extensive discussion of "Streamline DWV" copper tube and fittings—for drainage, waste, and vent—is given

Continued on page 97

Here's information you'll want on a System your Clients will want . . .



SPENCER Vacuslot®

. . . the modern, built-in vacuum system . . . the complete housekeeping facility that handles mop-cleaning, vacuum cleaning, water pick-up and boiler cleaning.

Request Bulletin 153D

The SPENCER TURBINE COMPANY HARTFORD 6, CONNECTICUT

For more information, turn to Reader Service card, circle No. 320

HOWARD MILLER

Tell much more than just the time . . . with a HOWARD MILLER BUILT-IN WALL CLOCK. America's foremost manufacturer of modern clocks offers a complete line from 9" to 24" diameters in many finishes. Also custom clocks to your specifications. Descriptive literature upon request.

BUILT-IN DIVISION

howard miller clock company ZEELAND, MICHIGAN

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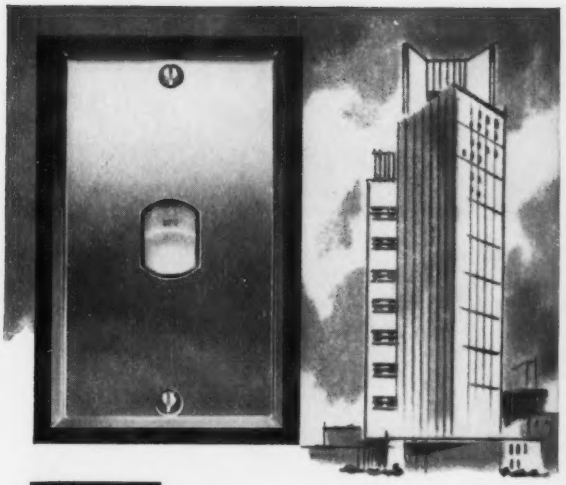
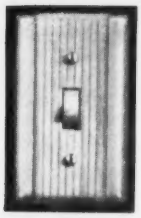
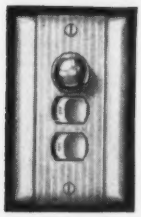






the Switch of the Future

ready for your use NOW!

P&S **ROCKER-GLO SWITCH**

Many of today's switches are specialties primarily for decoration; some others are sturdily constructed for heavy duty performance. Now in one switch these two features are combined – P&S Rocker-Glo. Rocker-Glo's design and action are such that it can be pressed, pushed, rocked or rolled. It has the basic rugged mechanism that insures long, trouble-free performance. Eventually all light switches may have a rocker action – like Rocker-Glo.

Rocker-Glo switches are AC switches designed to be used at full current rating on tungsten filament and fluorescent loads (one switch takes the place of two ordinary AC-DC switches on fluorescent loads). It can be used anywhere old style toggle switches are used.

Rocker-Glo's clean functional lines and soft beauty blend with any decor and add a touch of gracious charm to any type of building.

Available in Despard interchangeable type, Despard type mounted on a strap and narrow rocker for tumbler switch plates. A specification grade switch, 15 and 20 amps. 120/277 volts AC.

Write for free Rocker-Glo bulletin, Dept. PA-76

P&S **PASS & SEYMOUR, INC.**
SYRACUSE 9, NEW YORK

60 E. 42nd St., New York 17, N.Y. 1440 N. Pulaski Rd., Chicago 51, Ill. In Canada: Renfrew Electric Co., Ltd., Toronto, Ontario

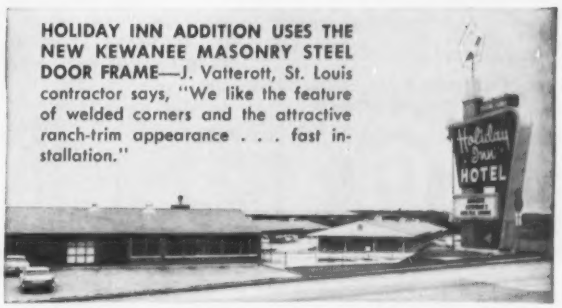
For more information, turn to Reader Service card, circle No. 322

. . . WITH THE SMOOTH, RANCH TRIM LOOK!

LOW INITIAL COST—far less expensive than outmoded, bulky wood trim and jambs.

FAST, EASY INSTALLATION—frames are factory-welded and *shipped ready for installation!*

SIZES FOR 1⅜" & 1¾" WOOD DOORS —3⅝" & 6" OR THICKER MASONRY WALLS—Frames for special applications can be made to order. Submit wall details with inquiry.



HOLIDAY INN ADDITION USES THE NEW KEWANEE MASONRY STEEL DOOR FRAME—J. Vatterott, St. Louis contractor says, "We like the feature of welded corners and the attractive ranch-trim appearance . . . fast installation."

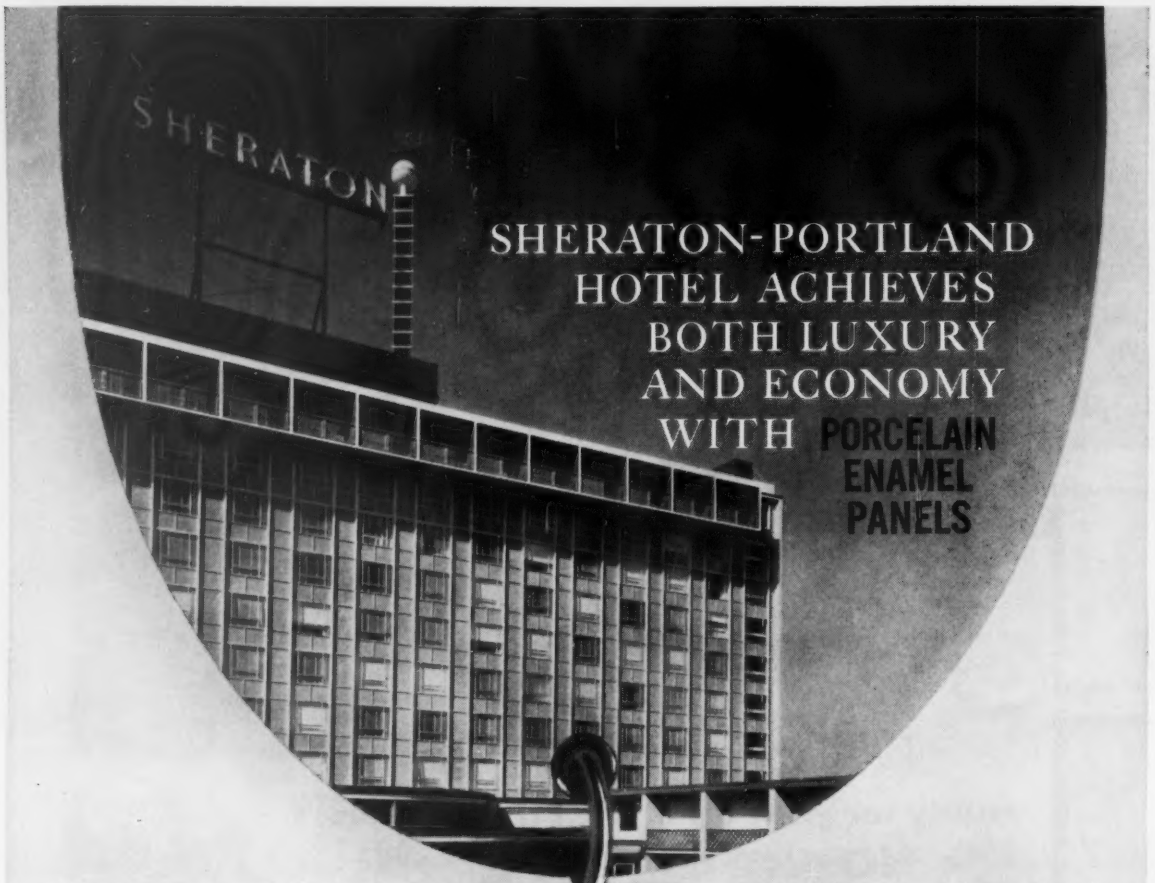
WRITE FOR BULLETIN MDF 360

Also conventional contour frames available to order.

kewanee *Manufacturing Co*

760 ULLRICH ST. • KEWANEE, ILL.

For more information, turn to Reader Service card, circle No. 323



SHERATON-PORTLAND HOTEL ACHIEVES BOTH LUXURY AND ECONOMY WITH PORCELAIN ENAMEL PANELS

To create an overall theme of elegance and beauty for this completely modern hotel, architects Perry, Shaw, Hepburn & Dean specified porcelain enamel steel panels. The supplier chose Inland enameling iron for its uniform flatness and excellent enameling characteristics. Finished panels were delivered to the site set in metal frames. They were extremely easy to install and provided 15,000 square feet of refreshingly colorful design.

Porcelain enameled panels are simple to clean, acid-resistant, weather-resistant and colorfast. They completely eliminate later refinishing costs generally required with ordinary painted panels —make present and future maintenance of this attractive hotel extremely economical.

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Use Steel For Modern Construction

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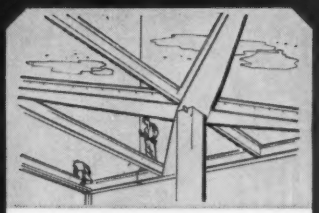
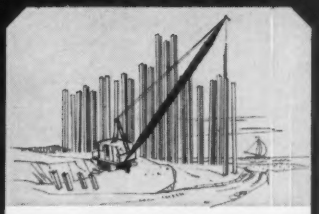


INLAND STEEL PLATES are offered in a wide range of gages and sizes with metalurgical and physical properties tailored to every construction requirement.



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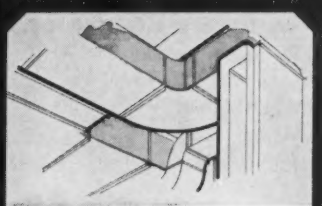

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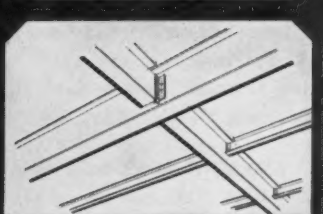

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Continued from page 94

in 32-page *Catalog D-459*. Because of fairly recent introduction of DWV tube (in 1950), plumbing codes are still slow in its acceptance. Catalog contains information of interest to those with code questions. Typical installations are shown in construction photos; all fittings are fully specified; advantages of economy, efficiency, and durability are outlined. Mueller Brass Company.

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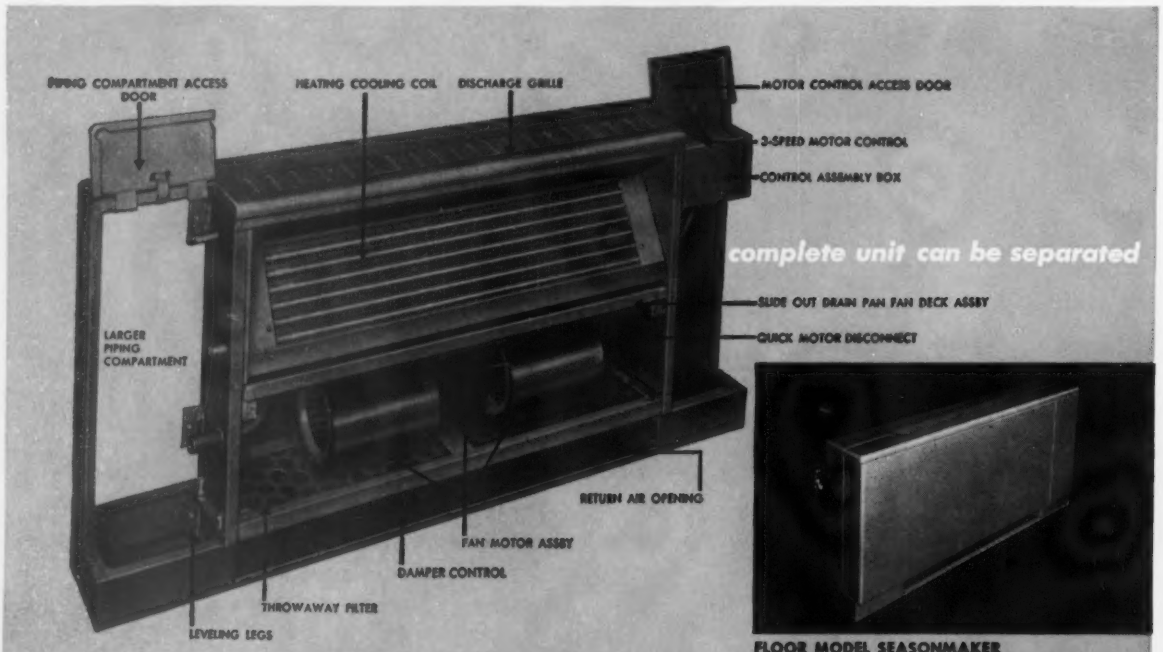

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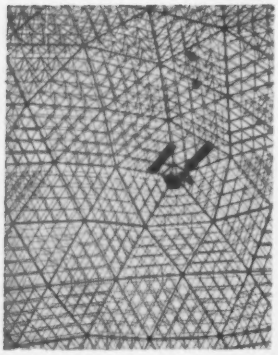
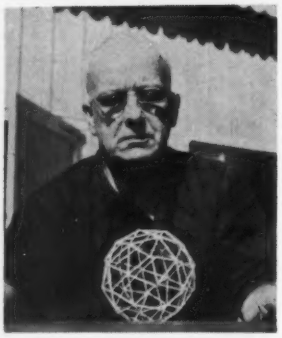
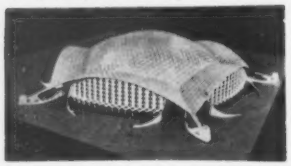
THE DYMAXION WORLD OF BUCKMINSTER FULLER



The bridge to this world of patterned abundance is what Fuller calls "Comprehensive Design." The book reviews this kind of design and what it means in terms of human advantage.



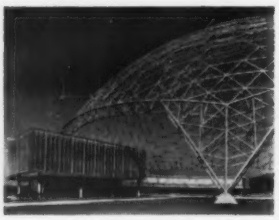
The book interprets the man responsible for the dymaxion world: his philosophy, background, and significance.



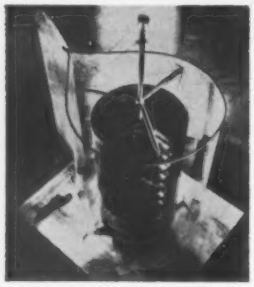
Thoroughly depicts the most famous of Fuller's creations, the dome. Includes those used by concert halls, sports palaces, industry, agriculture, banks, societies, to name just a few.

Includes all building types—their uses, design, materials, methods of construction, etc.

Presents Fuller's prophecies—transparent domes that cover entire cities for climate control; submarine islands; temporary, disposable dwellings.



Provides an incomparable visual record from earliest designs to current projects under construction.



Explains the Fuller vocabulary with pictorial examples: energetic-synergetic, tensegrity, geodesic, dymaxion, dwelling machine, octet truss, and 4D.

Covers the entire gamut of Fuller achievements—buildings, transports, geometry, cartography, deployment units, and many others.

Provides a complete, visual record of Fuller's work . . .
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Way back in 1938 another originator, Frank Lloyd Wright, addressed Fuller as "the most sensible man in New York." In the delineation of his subject's life and philosophy, Mr. Marks reveals a man whose foresight and energy would naturally gain the attention and respect of other great innovators.

When the book's narrative moves from the man to his work, it takes the reader on the most complete tour of the Dymaxion world ever devised. Included are all the provocative Dymaxion projects that were 25 years ahead of their time—4D house, deployment units and transports, as well as Fuller's more recent work on Geodesic domes and space frames. The book also reveals the "total design" principles behind all these highly original concepts.

In addition, the pattern of thinking which evolved a system of geometry—Energetic and Synergetic—and a new system of map-making, is brilliantly analyzed.

The book is splendidly illustrated with over 350 fully captioned photographs and drawings that graphically depict the plans and structures, the today and tomorrow in Mr. Fuller's Dymaxion world.

A major portion of the illustrations appear in their own sections. Here are the topics of these sections, many of which are several pages each.

ILLUSTRATION SECTIONS: Astor Plane; Stockade System; Multiple-Deck 4D House: Air Ocean World; Dymaxion House; Dymaxion Bathroom; Dymaxion Transport; Mechanical Wing; Dymaxion Deployment Unit; Dymaxion Dwelling Machine; Synergetic-Energetic Geometry; Maps and Charts; Tensegrity; Octet Truss; Minor Inventions; Autonomous Package; Geodesic Invention and Development; Skybreak Dwellings; Ford Dome; Seedpod Foldable Geodesics; U. S. Marine Corps Geodesics; Radomes; Paperboard Domes.

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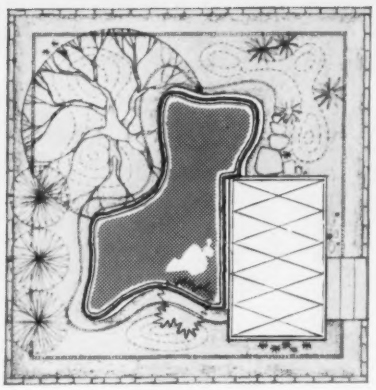
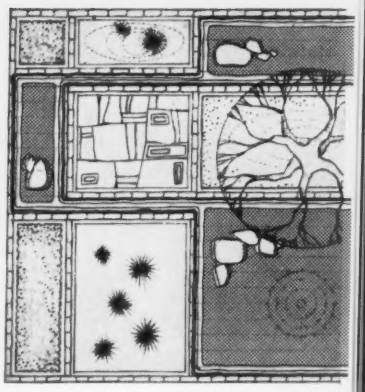
Design of Exterior Spaces





BY JAN C. ROWAN

Alfred North Whitehead once berated the western world for its "lack of reverence in the treatment of natural or artistic beauty." He said: "Just when urbanization was entering its state of most rapid development and when the most difficult and delicate and anxious consideration of the esthetic qualities of the new environment was requisite, the doctrine of the irrelevance of such ideas was at its height."

One of the difficulties of the city has been its rapid growth. Urbanization has spread over all boundaries, jurisdictional and natural. Whatever design pattern a city may have had has been buried under banalities and expediencies. Today, with an ever increasing volume of construction, this blight extends even further, and western civilization is faced with an obvious and desperate need for the rediscovery and redefinition of urban, as well as suburban and rural design.

The task of forming significant designs involves the creation of plans which not only operate well in terms of efficiency and proper land use, but which also have a sense of over-all scale, rhythm, and continuity, and a series of related but expressive parts and focuses. This requires an understanding of the planning process, and an insight into the many administrative and fiscal devices and legal powers which must be utilized to achieve such design purposes.

For some decades now, there has been no evidence of professional firms devoted exclusively to this total aspect of land design. The explanation of the phenomenon is hidden in the pages of history.

Landscape architecture had its beginning in this country over 100 years ago, when Frederick Law Olmsted visualized his practice as encompassing the architecture of environmental spaces. Prior to Olmsted, the closest field had been that of landscape gardening, as practiced by Humphrey Repton and Andrew Jackson Downing, and confined largely to the design of estate gardens.

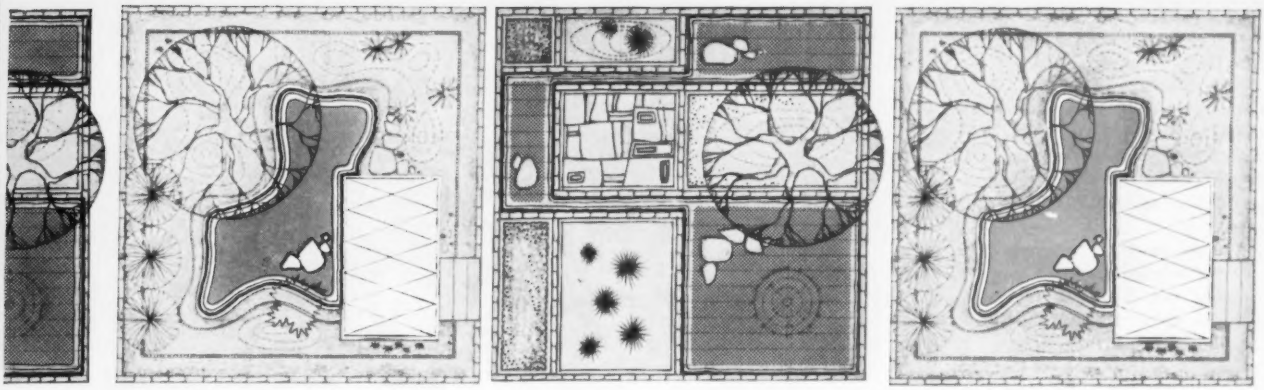
Olmsted not only defined the field of landscape architecture, but he also shaped the ideals and formulated the standards for the profession. The scope of his work was vast: from large-scale conservation of scenic natural resources and the establishment of reservations such as Yosemite Valley, to the design of Central Park in New York, the Chicago World's Fair, and numerous town plans. He projected his idea of public parks as integral parts of city life into 80 major cities; planned and laid out suburban villages, college towns, and land subdivisions from California to New York; drew plans for the Capitol in Washington; planned the grounds for the University of California and its adjacent village Berkeley, for Leland Stanford, Amherst and many other campuses.

His pupils, Frederick Law Olmsted, Jr., and Charles Eliot, carried large-scale development of land even further. Olmsted, Jr., designed plans for Pittsburgh, Rochester, New Haven, Newport, Utica, Boulder, Detroit, and other cities. Charles Eliot became best known for planning the metropolitan park reservations in and around Boston, although his planning of colleges, parkways, and his development of the waterfront are equally significant; he executed plans for the siting of the town of Garfield, Utah, 1890, the redevelopment of Nahant, Massachusetts, 1893, and served as consultant for the master plan of the Rhode Island Agricultural College.

The work of Eliot and the Olmsteds indicates that modern city planning originated as a branch of landscape architecture. The first school to establish training in this subject was at Harvard University, where, in 1909, city planning was taught in the School of Landscape Architecture by Professor James Sturgis Pray. It was not until 1923 that an optional curriculum, specially designated to lead to a degree in city planning, was introduced. This was largely due to the reluctance of landscape architects to accept the field as defined by Olmsted and Eliot. Most landscape architects at this period were still interested in the practice of landscape gardening in the Repton-Downing tradition and preferred to remain identified with the planning of estates and the embellishment of land. At the same time, others, looking back to that aspect of Olmsted's work which dealt with parks, became specialists in park design. A few years later, this phase was emphasized to an even greater extent by extensive conservation work during the depression. It was only natural, then, for the neglected field of activity to seek its own direction.

The rate of urban decentralization was rapidly accelerated after World War II. Although the causes and effects of this phenomenon have often been documented, it might be justifiable to recapitulate here some of the factors responsible for the increasing pressure on available land.

Because of changes in methods of industrial production, the horizontal plant



proved to be the most economical and, due to the scarcity of large in-town sites, new industrial growth began to appear on the peripheries of city cores. Changes in housing demands and a rapidly increasing population led to the growth of large-scale housing developments, predominantly single-family homes on owner-occupied lots. Concomitant with this growth, auxiliary service facilities (such as shopping centers, schools, and churches) and the effect of the "new leisure" (demand for community centers, recreation fields, golf courses, etc.) further increased the need for raw land sites. The problem was aggravated by the "drive-in" trend: for instance, three times as much space is needed for modern shopping centers as for older in-town facilities, and outdoor theatres require a hundred times more space than urban ones. The population increase and postponement of some construction due to the depression and the war resulted in a demand for institutional building (schools, colleges, hospitals, public facilities) which had to be met: partly on presently used, but mostly on undeveloped land.

The automobile, of course, made all these changes possible. The cycle of space consumption developed when more and more components of urbanized society were freed from dependence on the railroad and the bus. This change in methods of transportation had another effect: an increasing amount of space was needed for transportation and distribution of goods, and made it necessary to include in site developments large parking areas. The estimate that the existing highway system would have to be doubled during the next twenty years, exemplified the growing demands on land brought about by motor vehicles.

The growth of air travel is also responsible for the decrease in the stockpile of raw land. Not only is land required for the construction of airports, but the need for safe access and the noise factor prevent many kinds of developments from being located around these key metropolitan functions.

Another new trend, noticeable since the war, is the phenomenon of the corporate image as expressed in site development. Where once manufacturing and research facilities were tucked away in industrial sections of the city and rarely seen except by those employed there, corporations are now building out in the open and using elaborate site development as a form of prestige advertisement. This change in taste may be related to the acceptance of contemporary art and architecture as a symbol of progressive management.

The increasing growth of large-scale out-of-town developments seems to have precipitated a revitalization of urban cores. Partly due to economic competition of grandiose suburban establishments, partly due to the increasing importance of urban renewal acts, and partly to the conditions of the mortgage market, many projects planned in urban areas involve large complexes of buildings.

The wider adoption of zoning and building ordinances has augmented the cases where land design becomes critical. In some instances the laws not only regulate the use of land, but also require developers to add landscaping to their sites.

It seems, therefore, that all these factors—increasing volume of construction and large-scale land development, laws and ordinances, search for prestige and general higher standards of esthetic enlightenment—have created a situation where designers work less often with single buildings and increasingly with complexes of buildings. Moreover, the growing shortage of accessible land makes it more necessary than ever to ensure both the utilitarian and economic return, and a sense of a visual satisfaction. Therefore, the finding of sound solutions to functional, economic, and esthetic site problems is constantly gaining in importance, and a favorable climate has thus developed for a professional practice devoted exclusively to this type of design problem.

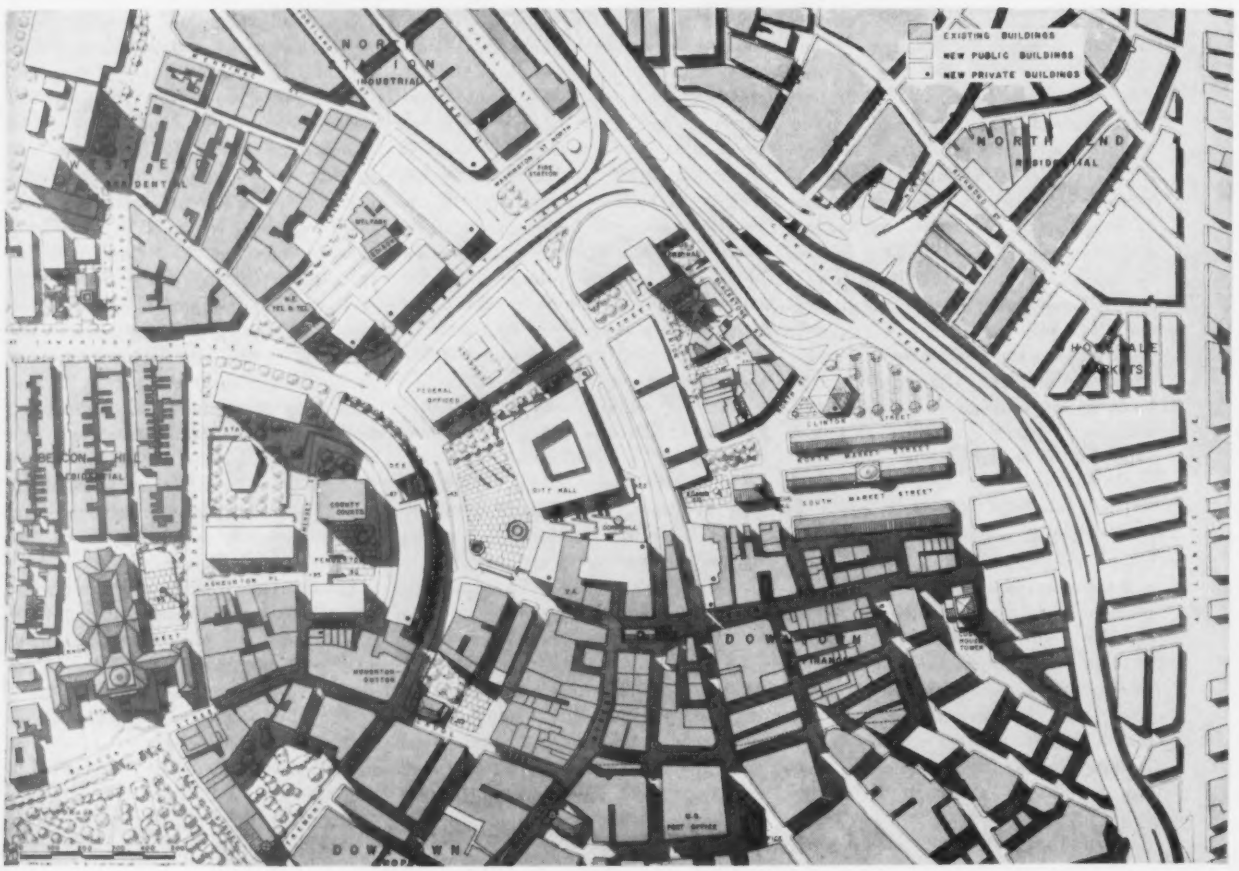
The growth of opportunities for professional practice in this field and a desire to return to the historical principles of landscape architecture as an art dealing with space and being concerned with the relationship between elements erected on the ground and the ground itself (in other words, to the design aspect of the use of land) explain the existence and the success of the office of Sasaki, Walker, and Associates (SWA).

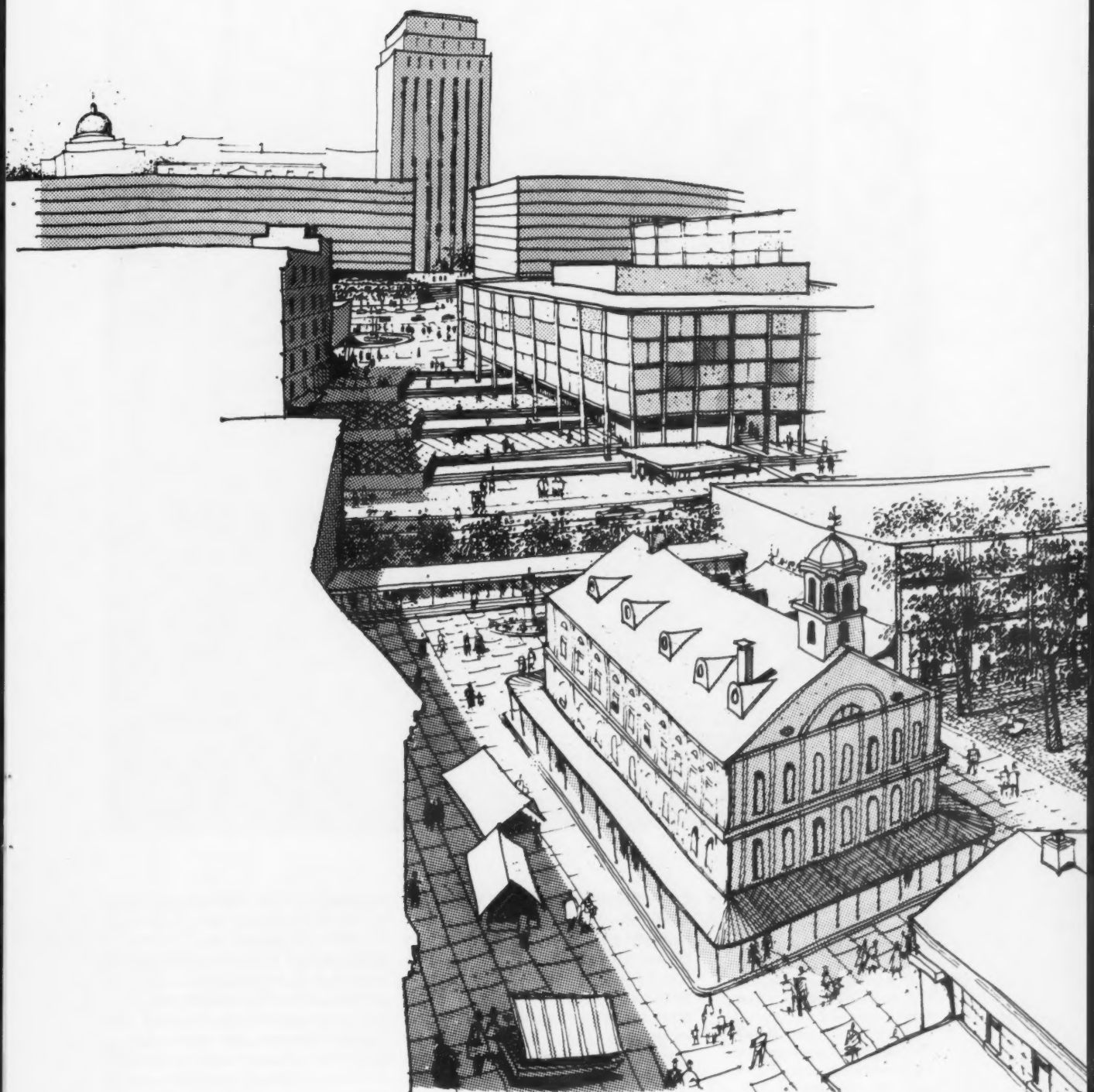
It's approach to design and the varying scopes, degrees of involvement, and diversity of problems, can best be explained by illustrating some of SWA's recent projects.

The Boston Government Center (page 110, 111 is an example of a complex urban redevelopment. The program called for a unified setting for federal, state, and county buildings, and opportunities for private construction. The site lies in

BOSTON GOVERNMENT CENTER • Boston, Mass. • Adams, Howard and Greeley, Consultants • Anderson, Beckwith and Haible, Kevin Lynch, John R. Meyer, Paul D. Spreiregen, and Sasaki, Walker and Associates, Associated Consultants.

The site consists of fifty acres of redevelopment land on Cornhill and Scollay Square, between Beacon Hill and Dock Square, on the northern edge of downtown Boston. Special design attention had to be given to spatial relationships between the various government building sites, as well as the usual functional considerations: accessibility between the sites and to other parts of the city, parking, and provision for expansion. Main features of the plan are: a basic radial pattern of streets, zoning of activities into three general areas, and a descending series of linked public open spaces.

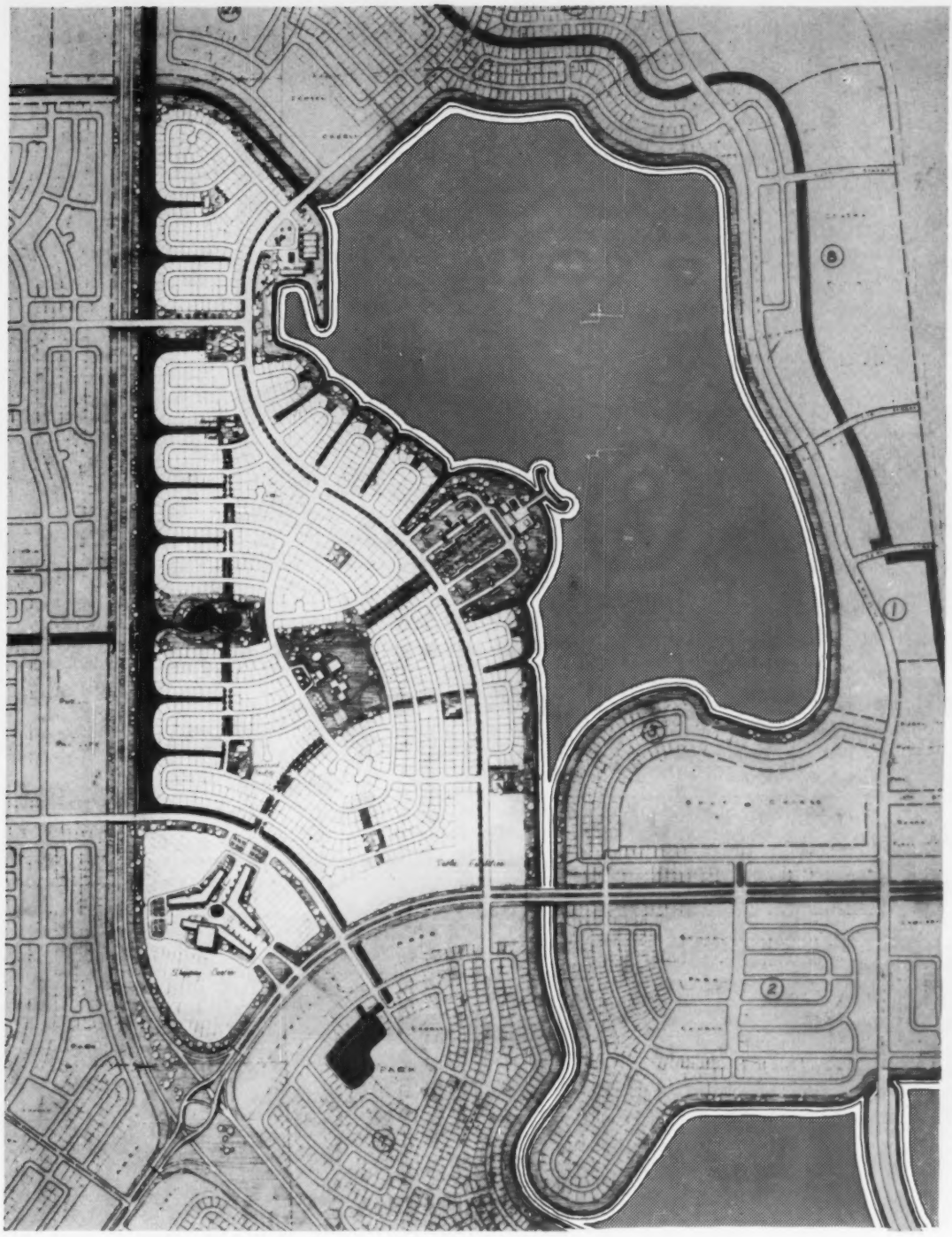




PALM BEACH LAKES • *West Palm Beach, Fla.* • *Perini Corporation, Land Developers.*

After plans for a new community on 4000 acres of undeveloped land were prepared by a firm of engineers (above), *SWA was asked to recommend design improvements of the basic scheme. Total cost, num-*

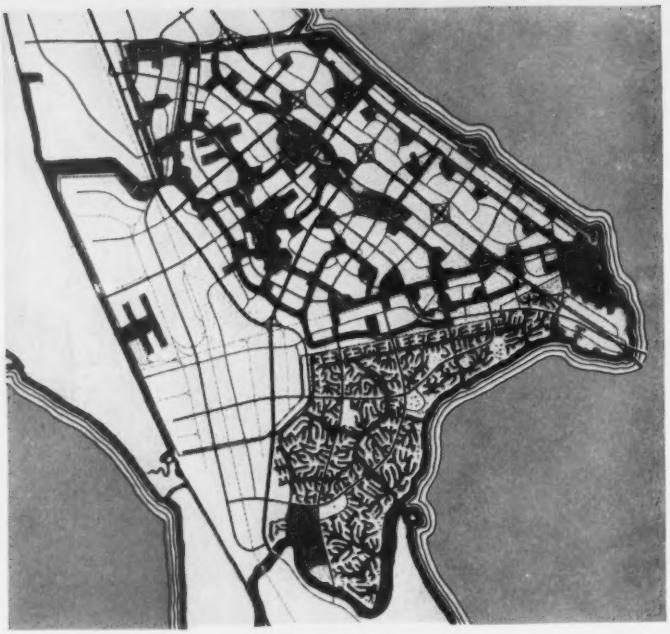
the most complicated section of Boston's circulation system; some of the existing buildings are run down, while others are commercially or historically valuable. The Chief Consultant put together a team of specialists in architecture, landscape architecture, planning, urban real estate, and traffic engineering. SWA acted as urban design consultants and advised on the location, character, and treatment of the chain of open spaces developed to set off public structures and to increase the attractiveness of the area. The new civic square, around which the most important government buildings are grouped, will be the focus of the composition. All of the squares and pedestrian walkways will be furnished with fountains, benches, and sculptural trees. In the future, the open-space system could be extended through the market area, via an underpass, out to the waterfront, and

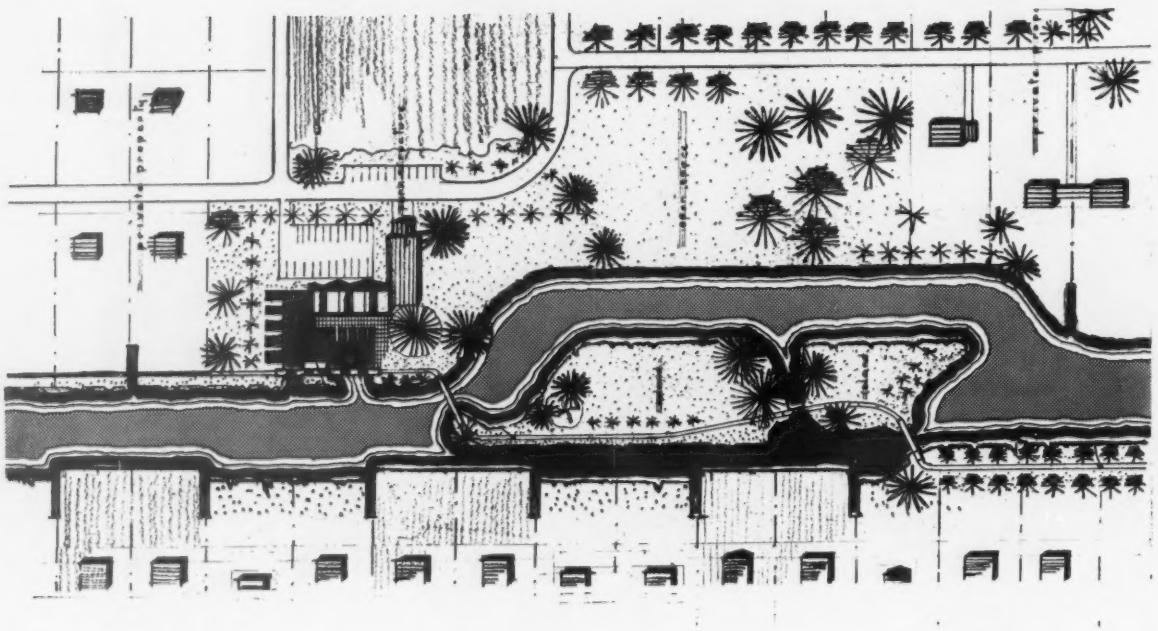


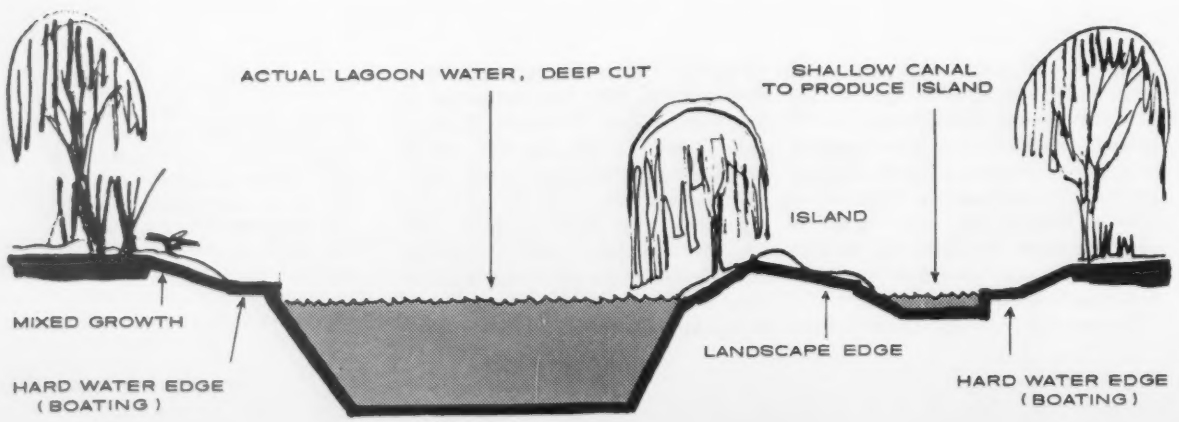
could also be linked with pedestrian areas in historic Boston. One of the strongest recommendations was to control building heights, so that there would be no danger of destroying the silhouette of the State House dome which crowns the crest of Beacon Hill. This led to the choice of a low "envelope" for the City Hall and to the placement of higher buildings in another location.

In the Palm Beach Lakes project (page 112, 113), a new community on a 4000-acre site, SWA was design consultant for the land developers. The program called for housing for several income levels, a shopping center, industrial sites, and an integrated system of community open spaces and public facilities. SWA was given plans prepared by an engineering firm and asked to recommend ways of improving the community-design aspect of the development. Total

ber of house lots, amount of paving, and utility lines were to be unchanged. The redesigned scheme (above) *makes full use of natural elements and has a strong design pattern. The two plans are a good example of the difference between an engineer's approach to land use and the approach of a more imaginative designer.*





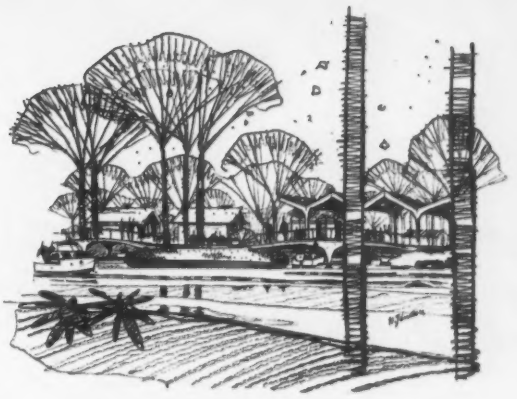

ACTUAL LAGOON WATER, DEEP CUT
SHALLOW CANAL TO PRODUCE ISLAND
ISLAND
MIXED GROWTH
HARD WATER EDGE (BOATING)
LANDSCAPE EDGE
HARD WATER EDGE (BOATING)

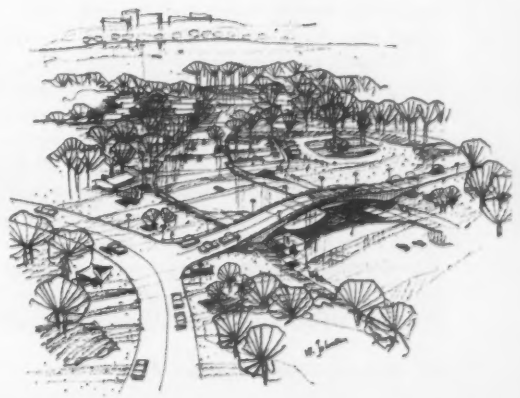
NEW ORLEANS EAST • New Orleans, La. • Harland, Bartholomews and Associates, Planners and Civil Engineers.

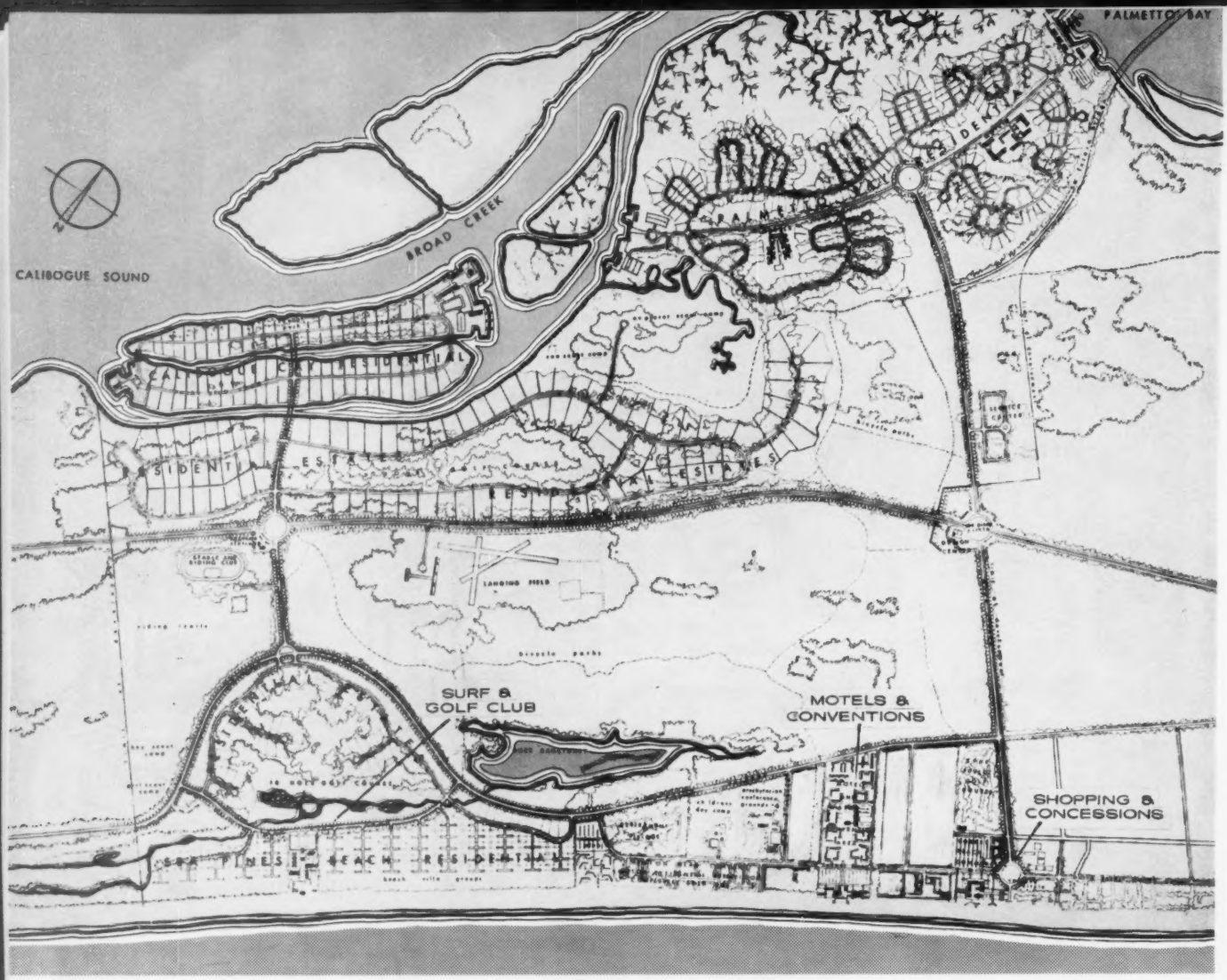
The history of New Orleans could be described in terms of man's ingenuity in controlling the forces of nature. A surfeit of water has always been a problem in this region. In the past, however, water has been hidden in culverts, pumped into lakes and rivers, and generally ignored as an esthetic device in producing a more agreeable cityscape. In this project water will be used as the principal design element. Lewis Clarke and William Johnson assisted with the designs.

The site, 33,000 acres of waste land in the northeast corner of the city, is currently being drained and given a new physical form. The program called for a new community with an estimated population of 175,000 people. Adequate space for schools, universities, churches, playgrounds, shopping and business centers will be provided. Part of the area, assigned to heavy industrial use, will have deep water and barge canal frontage. Light industry will be serviced by rail and highway transportation only. Housing will be diversified; individual homes and apartments, in all price ranges, are included in the scheme.

The drainage system, used in this scheme to provide a design skeleton, was given careful attention in its treatment. Details of a typical canal piercing through a residential area (acrosspage center) *explain some of the ideas incorporated in the plan. On one bank individual lots are carried to the water's edge; on the opposite bank a community open space acts as a contrasting element to the line of buildings. A public pathway crosses two man-made islands. A boat basin and a planting barrier complete this nodal area. The open space and the islands break the canal's length and relieve the monotony of a long vista. Typical section* (acrosspage bottom) *shows the variety of bank treatments intended to be used in the project.*



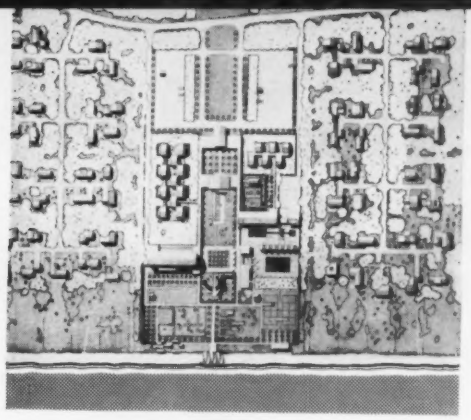




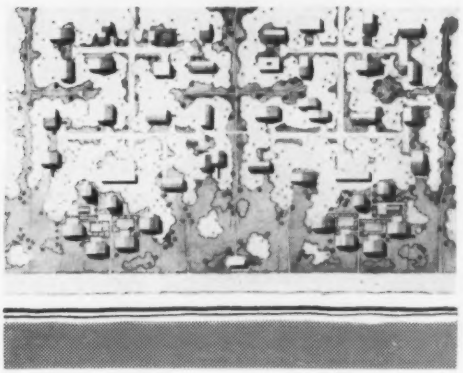
cost of the basic plan, utility locations, number of house lots, and amount of paved surfaces had to be comparable to the engineering plan. In the redesigned plan, most single-family houses, which fronted on major traffic ways, were shifted to loop streets, and buffered from traffic by strip-planting and open spaces; pathways, linking focal points in the community, were sited away from main arteries. The major design elements of the Florida region—water and greenery—have been combined to provide a skeleton on which residential areas and other land uses were hung. The open-space system was designed for twenty-four-hour use by the residents: all single-family homes are within 600 feet of usable open space. Maximum advantage has been taken of the potential recreational uses of the lake and the canals. The design reflects a conscious attempt to open this use to all members of the community as well as to visitors to the area. Considerable attention has also been given to providing a variety of spatial and visual experiences by varying the uses of land. This can be seen, for instance, in the creation of a large mall of green open space along the main highway and termination of the long vista with a community facility.

In the case of New Orleans East (pages 114-117) SWA was asked to study the esthetic possibilities of drainage waterways, canals, and lagoons. The basic layout, made by a planning-engineering firm, calls for a new city with a population of 175,000, to be built on a 50-square-mile site located within the city of New Orleans. The land is presently being drained and prepared for development. SWA utilized the drainage system to create design skeletons of open spaces beginning at the house lots and climaxing at the cores of the community—the high-rise sections and shopping areas at the edges of lagoons. To create a design identity for major subsections, planting en masse of one particular species will be used.

Another large planning project now being developed is on the Hilton Head Island in South Carolina where a recreational community will be built. The property has one of the last remaining virgin beaches on the eastern seaboard. The owner, anxious not to despoil the land, commissioned the preparation of plans to determine how the land might be best developed. SWA's design encourages the use of shore-front land in depth: residential areas are planned as clusters of cul-de-sacs, and continuous green-ways provide each house with pedestrian access to the beach; to prevent chaotic scattering characteristic of most beach front developments, commercial buildings were interconnected by arcades and planned in tight groups around paved courts. Large open public areas were included in the scheme to



Surf and Golf Club



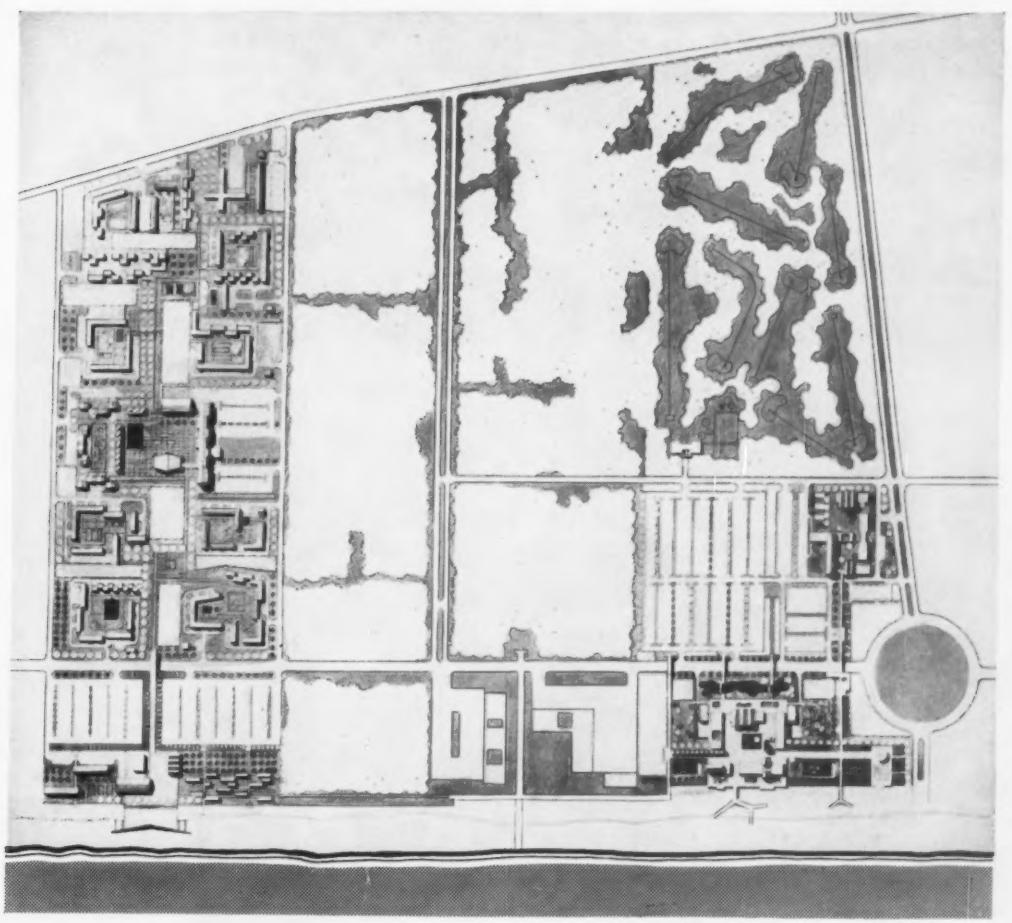
Detail of Residential Area

SEA PINES PLANTATION AND FOREST BEACH CORPORATION DEVELOPMENT
• Hilton Head, S. C.

A recently completed bridge made one of the coastal islands accessible to the public. SWA was commissioned to design a detailed plan for 4000-acre recreational community.

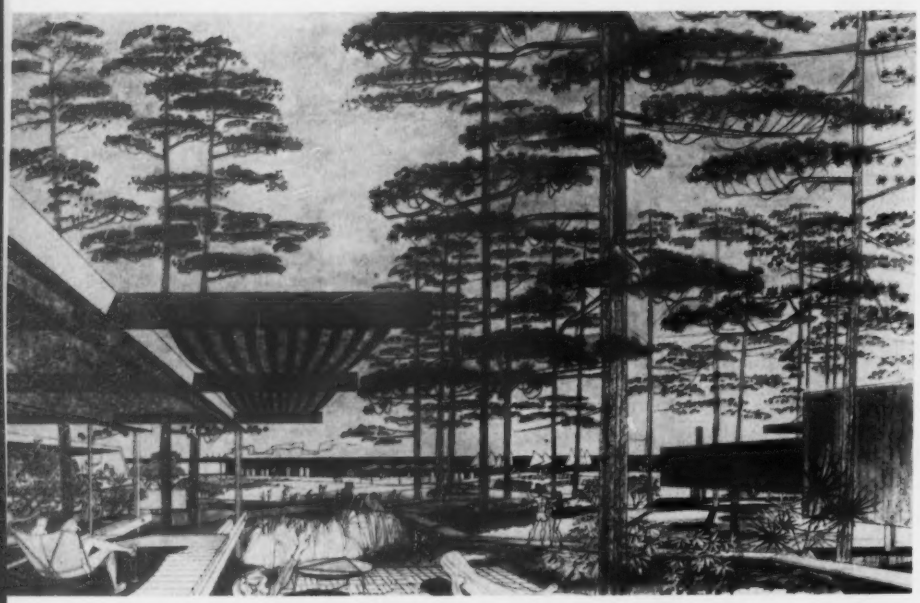
The area on the eastern fringe of the island borders the open ocean and will be devoted to uses related to the beaches. The plan encourages the use of shore-front land in depth and also provides for large open spaces.

A typical residential area has a system of cul-de-sacs and 6-unit clusters of houses. The houses are grouped around stub roads, leaving an uninterrupted green-way used for access from each lot to the beach areas. At each junction point of the green-way will be a children's play area (for each 16 houses). At points where the green-ways reach the beach, community facilities, such as picnic shel-



Motels and Conventions

Shopping and Concessions



ters, are planned for each 32 to 35 families.

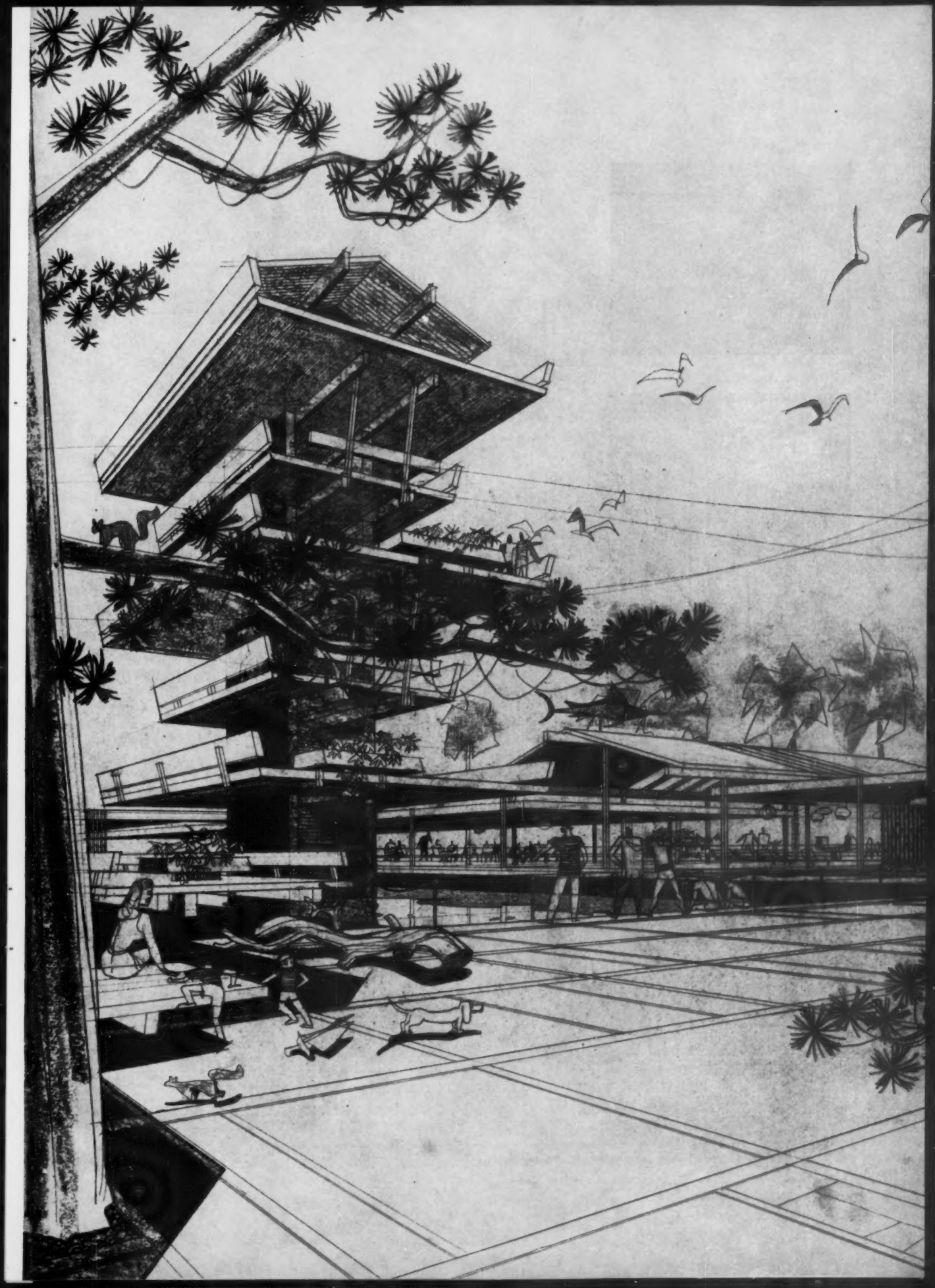
At the end of every major cul-de-sac stem and beyond the vegetation line there will be a cluster of six houses. The rear houses are planned as two-story units with living areas located on the upper floors (for view and ventilation) and the front units are one-story high (to avoid blocking the view). These six-unit clusters are the only houses extending beyond the foliage line, and they are placed on the high ridge line for protection against hurricane floods.

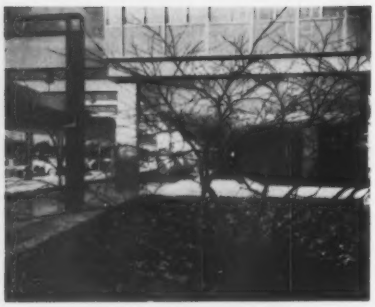
In the Surf and Golf Club the budget limited the amount of building construction possible. Therefore, architectural elements were dispersed, extended covered passageways and other open or semi-open structures were planned, and the landscape treatment was depended on to carry out the major portion of the design development. Plants of all types, from stately palms to romantic live-oaks, grow profusely in this area, as well as fragrant jasmine, colorful azaleas, dogwoods, and camilias. Thus, in the tradition of the Old South, the strongly-structured gardens will create the backbone of the design.

Next to the large traffic circle, which is the terminus of the main entrance road, are placed shops and beach concessions. The buildings here are grouped tightly around a paved plaza and interconnected by arcades to prevent the scattering which is characteristic of typical commercial beach-front developments. Public parking for 1020 cars is provided nearby to keep the day-users of the island concentrated around this area. Avenues of palms are used to create a backbone of the visual design structure; and the observation tower, from which one can view the entire island, will act as the focal point of the composition.

Motels were arranged in clusters, a plan which gives identity and coherence to each ensemble of buildings. A green-way interconnects the motel units and leads to the convention complex in the center, where a restaurant, meeting rooms, a swimming pool, and an inn are provided.

Perspectives show cluster housing (top), *a view along a residential green-way* (center), *character of the shopping and concession area* (bottom), *and a detail of the viewing tower* (acrosspage).





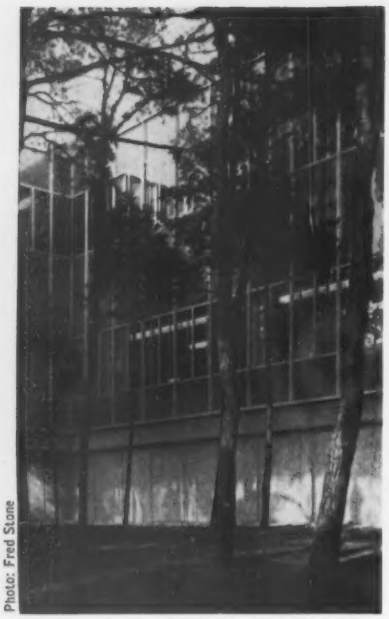
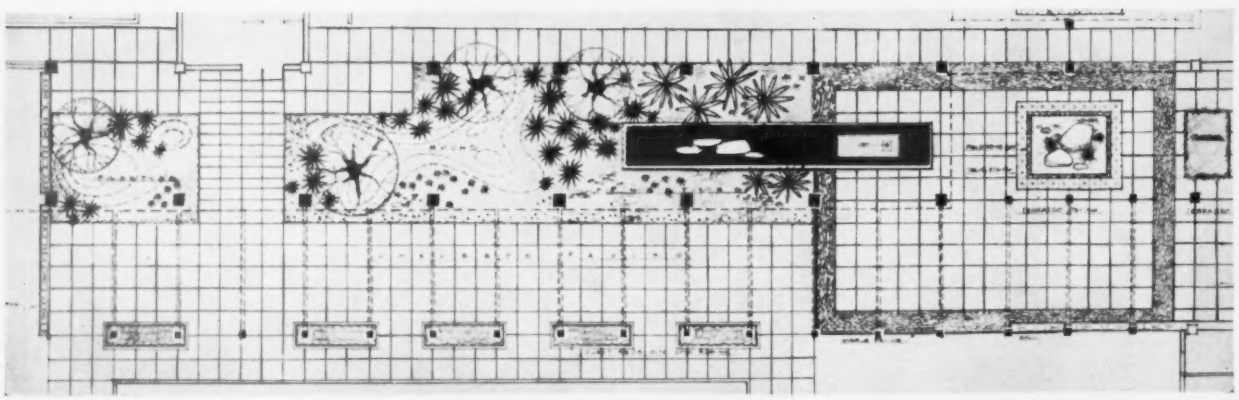


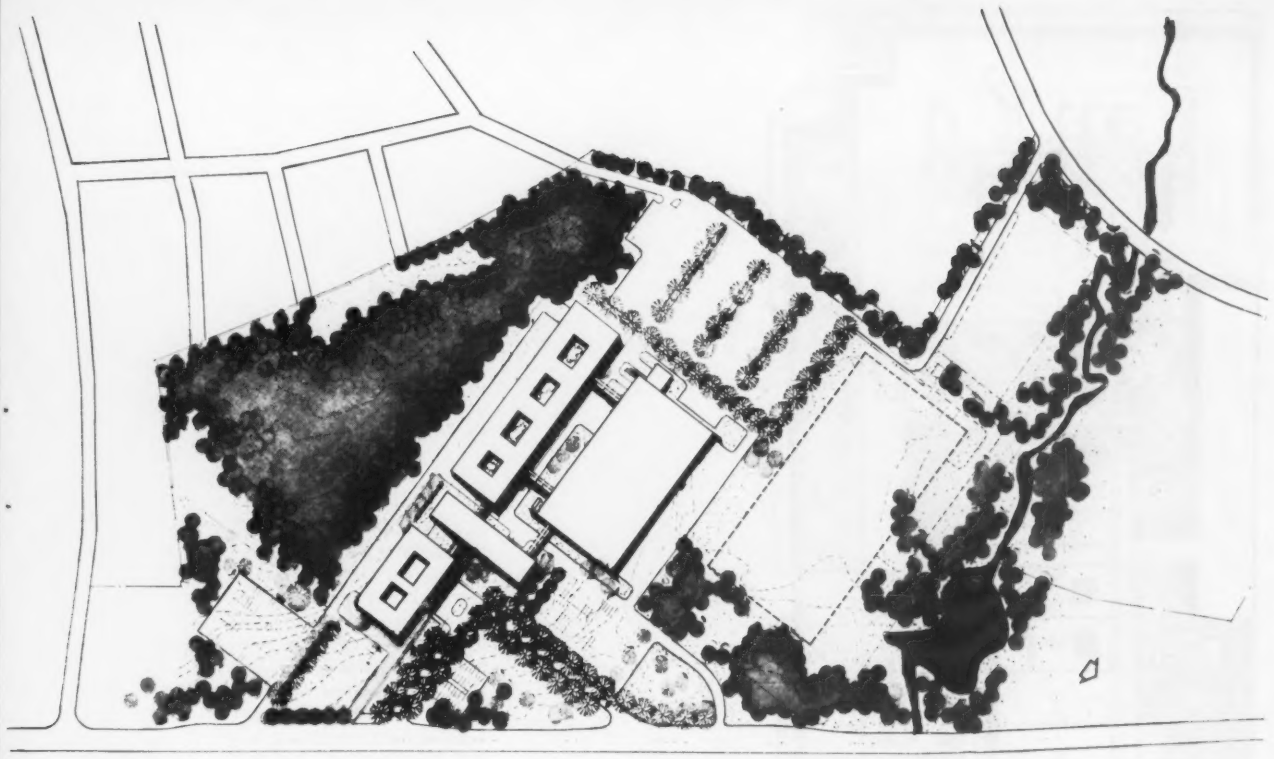
Photo: Fred Stone

***AVCO MANUFACTURING CORPORATION, RESEARCH AND ADVANCED DEVELOPMENT CENTER** • Wilmington, Mass. • Pereira and Luckman, Architects.*

The 100 acre, heavily wooded site is located in a rural area; an existing stream meandered through its lower part. Four large buildings had to be accommodated and provision made for a fifth. In addition to parking for 1100 cars, recreational facilities for employes and public grounds for the town's use were to be provided.

The intent of the design was to maintain the rural atmosphere. This was achieved through the use of indigenous white pines and sugar maples which, in combination with gently rolling earth mounds, served to screen most of the parking (acrosspage) *and to soften the sharp lines of the building* (left). *The stream was impounded to create a water reservoir for fire protection and for recreational purposes. More elaborate landscaping treatment was used only within the building complex* (below).





prevent over-all construction on the island. Low, naturally swampy areas, will be dredged to make lagoons and the sand will be used to build a golf course. Thus basically, the scheme utilizes natural topography and creates a series of commercial, residential, and recreational areas unified by a system of roadways and an over-all planting scheme. In this project the design was carried out from the master plan down to detailed designs for each area (pages 116-119).

A typical "corporate image" project is that for Avco Manufacturing Corporation—a large industrial plant located in a rural area (pages 120, 121). Besides functional requirements, the owners included in the program recreational facilities not only for employes but also for inhabitants of the adjoining town. By modulating earth contours and using native trees, parking areas were effectively screened, the architecture softened, and the rural atmosphere satisfactorily preserved. More elaborate landscaping treatment was reserved to create visual points of interest within the building complex itself.

The last four projects illustrate the use of natural elements to achieve a pleasant environment, suitable to the functions of the buildings and utilizing existing topographical and ecological conditions.

In the U.S. Embassy in Teipei (page 122) the formality of architectonic elements was softened by full use of the varied quality of natural elements native to Teiwan. On the other hand, in the arid site of the U.S. Embassy at Baghdad (page 123), the irrigation system was utilized as an element to unify several buildings. Terraces, walkways, and an orderly pattern of trees gave additional coherence to the composition; rich and colorful treatment of courtyards introduced an intimacy of detail at selected areas.

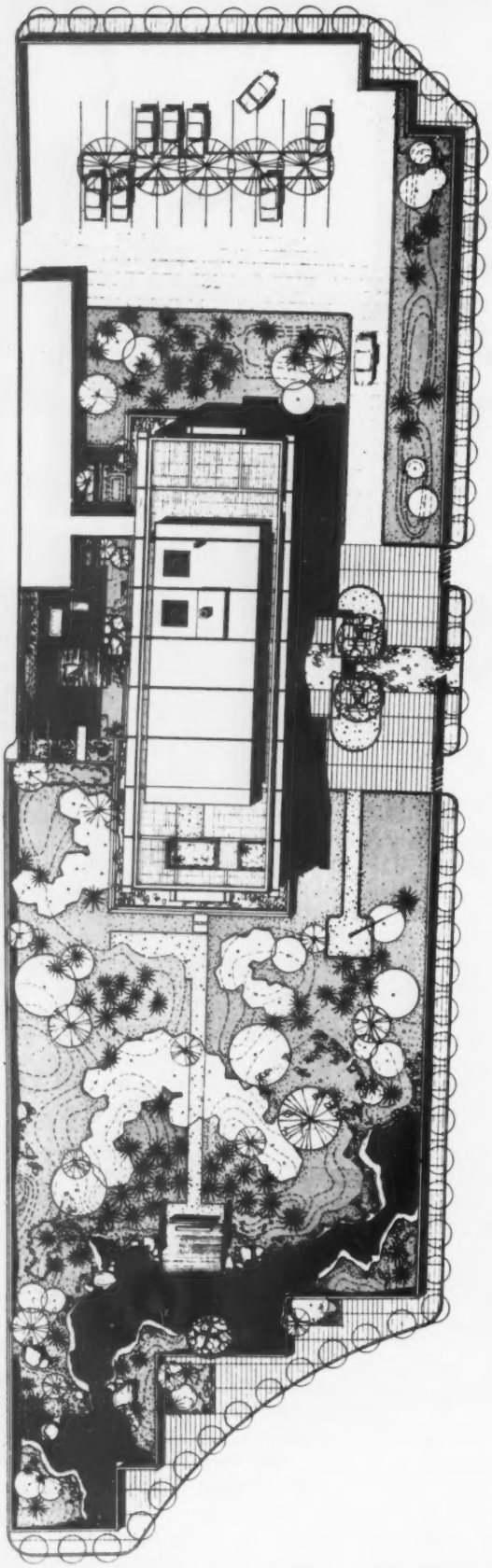
The Cuban Presidential Palace (page 124) is a solution to a complex problem created by difficult site conditions, varied use requirements, and the presence of historical structures. This design illustrates radical changes of character and scale—from a monumental plaza and processional avenues, to romantic, residential gardens.

Finally, in the Temple Adath Israel (page 125) a relatively simple problem of making a small courtyard visually attractive was solved by decorative use of typical landscape elements: plants, water, rock, and earth forms.

Today, because universities and colleges are beginning their greatest expansion programs, much of the firm's work is in this area of design. Among its clients are Harvard University, M.I.T., Goucher College, University of Rhode Island, and University of Illinois. Also in collaboration with architects Ernest J. Kump (Foothills College), Harry Weese (Drake University and Cornell College), Koehler & Isaac (University of New Hampshire) and others, they have advised on site planning and landscape development, as well as executed specific projects. Examples of this work will be shown in SEPTEMBER 1960 P/A, a special issue on universities and colleges.

It seems clear from this brief survey of areas of involvement and the design approach of the SWA office that its practice is growing rapidly because it fills a special niche in the design field—the design of exterior spaces at all levels of scale. The projects described in this article involve environmental control of areas ranging from only a few hundred square feet to fifty square miles; they show solutions of minute decorative details and of complex engineering problems—they document a conscious use of all man-made and natural elements in creating a practical, humane design, spatially and visually satisfactory.

Charles Eliot described before the



U. S. EMBASSY OFFICE BUILDING • Taipei, Taiwan • Anderson Beckwith and Haible, Campbell and Aldrich, Associated Architects.

The 210' x 620' site fronts on the south side of the principal thoroughfare, and is flanked on both sides by government buildings.

Taipei, which is semi-tropical, has many boldly textured plants. The intent of this preliminary design was to achieve a rich tapestry of landscape treatment, thus creating a contrast between the formality of architectonic elements and the varied quality of landscape materials.

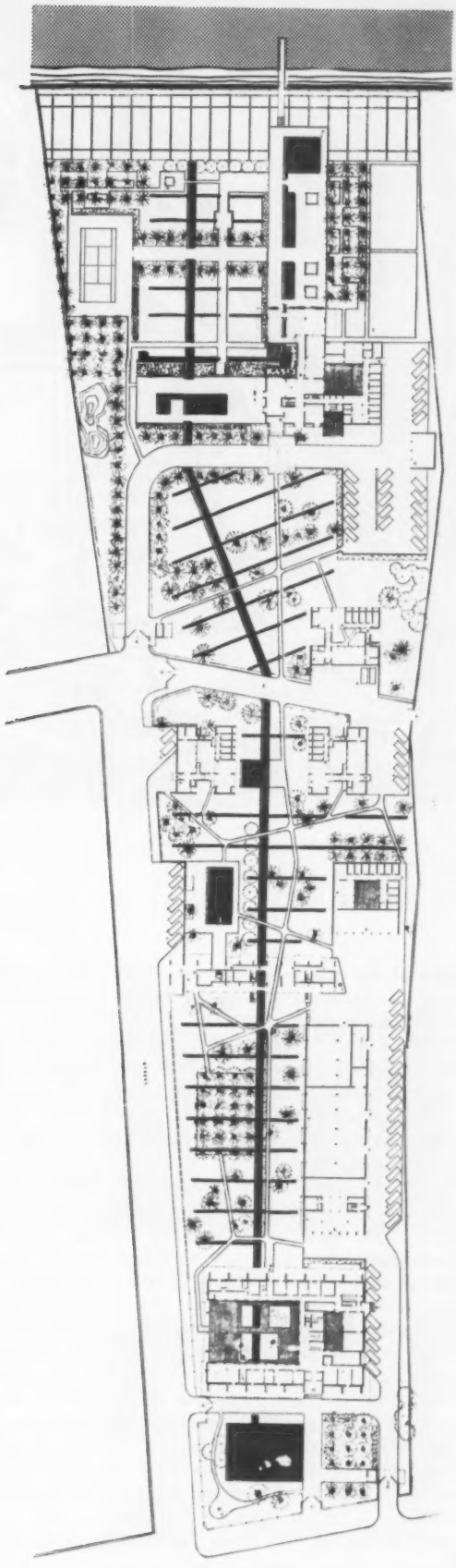
Because of the narrowness of the site, the building is located in the center and has a formal entrance way, directly in front of it. On the opposite side is a water garden, visible from the lobby. Parking and service are to the west; the main garden is to the east. The large pool serves not only as a decorative element, but also as an aid to the drainage of the property.

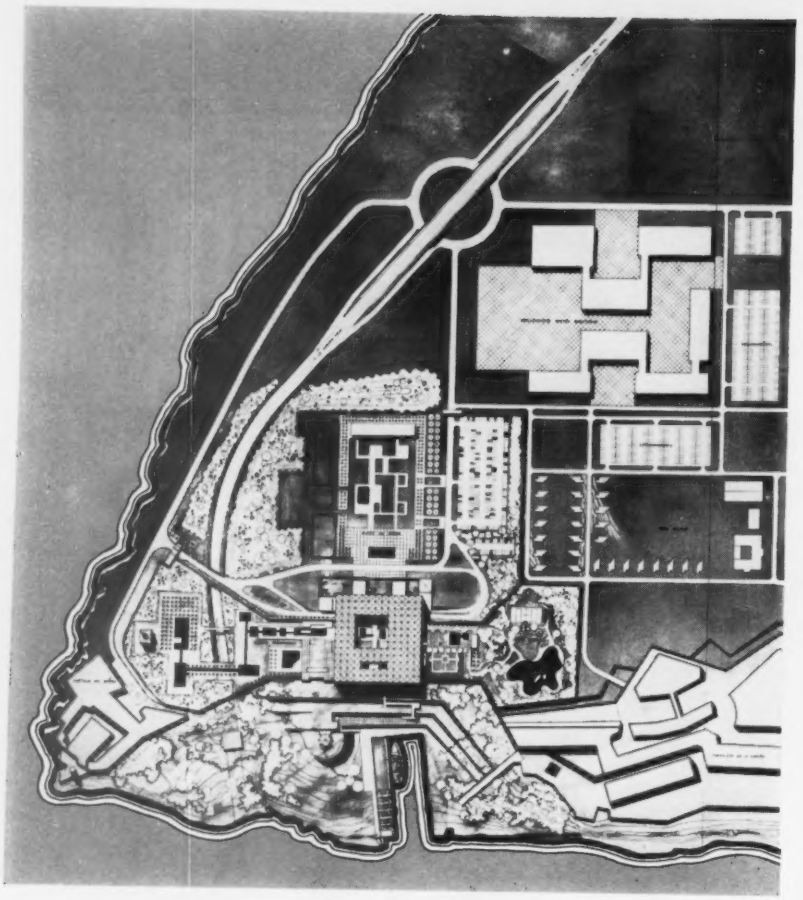
U. S. EMBASSY BUILDINGS • Baghdad, Iraq • José Luis Sert, Architect.

The property is a narrow, flat, 15-acre strip of land between the main thoroughfare of the city and the Tigris. The only existing vegetation is a sparse growth of date palms. A dike runs near the middle of the site.

The unifying theme of the design is the irrigation system. The main canal runs from the pump house on the river, through the various courts and gardens, to the main pool. Lateral ditches spread out from the main canal to distribute the water.

The terraces, walkways, and major planting of palm and shade trees were arranged to give a strong sense of order to the site. Within this unified structure, under the protective shade of overhead trees, are places where smaller scaled planting may be carried out for intimacy of detail and richness of effect. The courtyards are richly treated with colorful tiles and textured planting.





PRESIDENTIAL PALACE • Havana, Cuba • José Luis Sert, Mario Romanach, Gabriela Menendez, Associated Architects • Paul Lester Wiener, Consultant.

The site for this proposed Presidential Palace is on an undeveloped parcel of land lying on the northern side of the harbor opposite the old city, between two historic fortresses —the 16th Century Castillo del Morro and the 18th Century Fortaleza de la Cabana.

A new vehicular tube was constructed to connect Old Havana with the lands to the north of the harbor. (The yacht basin, indicated to the front of the palace, is the excavation in which the concrete tube sections were cast, plugged at the ends, floated out to the bay, and sunk to construct the tunnel.Q One of the major site problems was to accommodate the mouth of the tube, which came out within the garden area of the palace.

The designs call for the palace to be located at the high point of the land and between the two fortresses. Part of an old wall was used to tie the new palace to the historical buildings. Additional walls were placed in front of the palace to form terraces and to integrate the three structures.

The palace was composed of three major segments, the ministerial offices across the north face of the building, the ambassadors' reception and ballroom to the southwest, and the president's family quarters to the southeast. The outdoor areas were, therefore, developed as extensions of these spaces, each with its own character and scale.

To the north a monumental plaza can accommodate large public gatherings. An overwhelming scale was created by oversized terraces and walkways, as much as 50 ft in width.

To the west a processional garden was designed, with fountains, pools, and tiled terraces for ceremonial occasions.

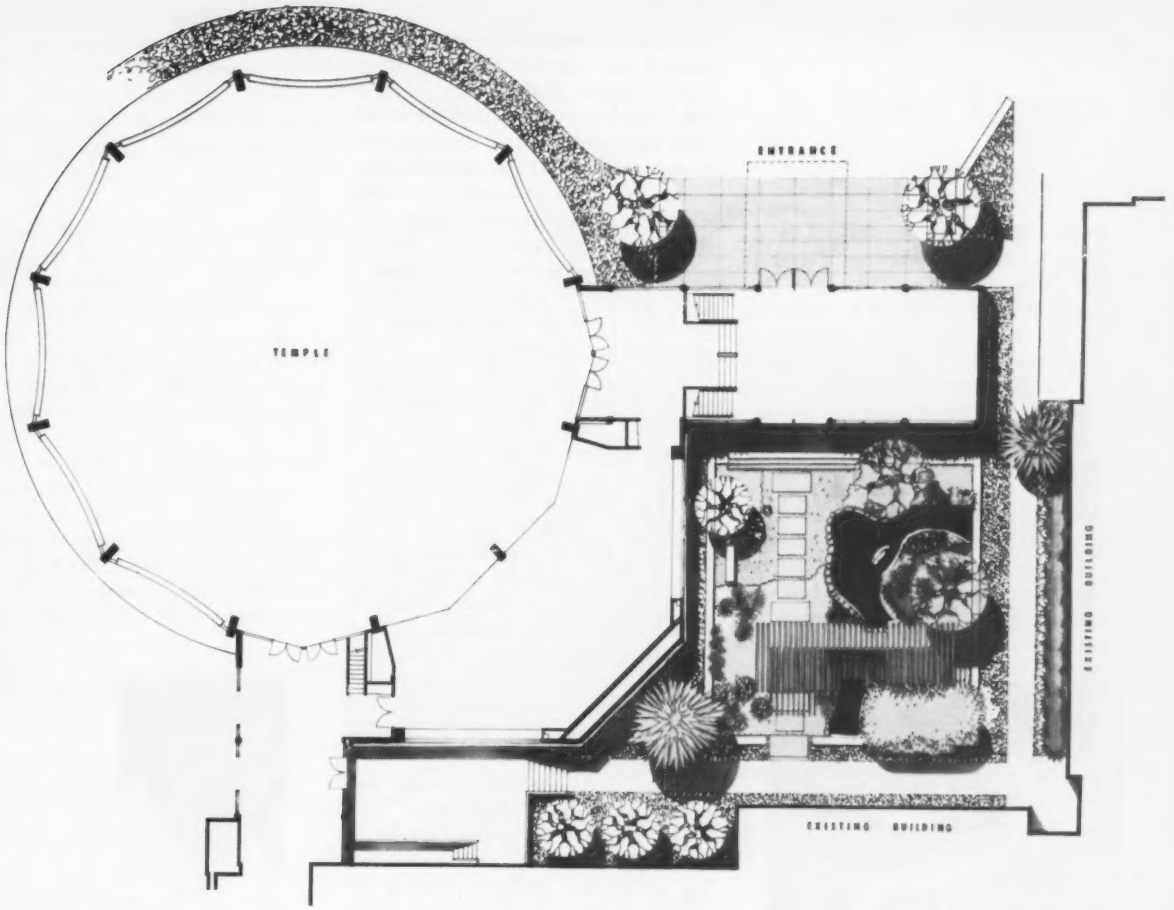
To the east was developed a garden of residential scale, with small winding foot-paths, an intimate formal garden, swimming pool, wading pool, tennis court, and other recreational areas for the use of the president's own family.

turn of the century his concept of the field of landscape architecture in the following excerpt from his notes:

"The scope and breadth of my profession is not often recognized—it is not comprehended even by architects, much less by the public. As I understand it, all conscious arranging of visible things for man's convenience and for man's delight is architecture: '. . . a great subject truly, for it embraces the consideration of the whole of the external surroundings of the life of man; we cannot escape from it if we would, for it means the molding and altering to human needs of the very face of the earth itself.' The building of convenient and beautiful structures is thus a part of the art of architecture. The arranging of these structures in the streets, in neighborhoods, on seacoasts, in the valleys of the hills, a careful adjustment of the structure to its site and its landscape, the devising of ways and roads so that they may be either impressive through order and formality, or charming through their subordination to natural conditions, the development of appropriate beauty in the surroundings of buildings, whether by adding terraces and avenues or by enhancing natural beauty—all this is or ought to be, at least one-half of the art and profession of architecture. This is the landscape architect's part: for the field is so wide that it can hardly be comprehended by one man and two professions seem necessary, each approaching and helping the other."

The firm of Sasaki, Walker & Associates states its contemporary version of the field of practice as follows:

"It might be misleading to formulate a concise definition of our work, since it arose from a need, rather than from an institutionalized activity. Any definition would have to account for the historical development of several professions and for the present state of environmental control. Design is a continuous process

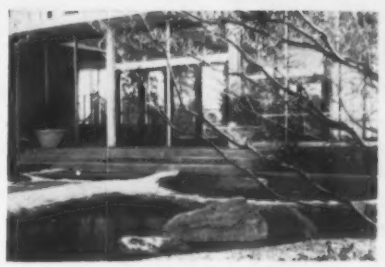


SYNAGOGUE FOR TEMPLE ADATH ISRAEL • Merion, Pa. • Pietro Belluschi and Charles Frederich Wise, Associated Architects.

The small interior courtyard was formed by an existing structure, the new synagogue, and the glass entrance lobby.

The problem was to design, within this rigid framework, a garden composition pleasant to look at all year round.

The structure of the design was created by using typical landscape elements. The texture of plants provides a backdrop, and visual interest is introduced in the foreground by plants, water, rock and earth



and involves considerations from the very broadest scale down to the most minute detail. Planners tend to work in those areas which are very broad in scope: where the social, political, economic, and geographic nature of the design is paramount. Landscape architects try to deal in a slightly smaller-scale design area, with greater emphasis on the physical form. And the architects are involved in the immediate problems of structure and form. These are generalizations, but convenient enough stereotypes to indicate a range of design purpose. The area to which we ascribe is the middleground: the design aspect of planning and the landscape aspect of architecture. This is the core of our concern in practice, teaching, and research. Because it adjusts structures to land at one end of the scale, and land to the planning process on the other, this kind of land design is, in the words of Stanley White 'a kind of high wire act.' However, by dealing less in matters of taste and more in matters of applied design theory—especially from the traditional viewpoint of the landscape/cityscape architect—a professional practice is being evolved that has social purpose, economic usefulness, and esthetic significance."

This return to the original concept of landscape architecture poses an interesting professional problem: what is the relationship between an architect and a landscape architect? In the following article Richard P. Dober explains the views of SWA on this subject.

Dober

Walker

Adelman

Frey

Walquist

Sakuma

Dawson

Olson

Sasaki

BY RICHARD P. DOBER
The executive director of Sasaki, Walker and Associates—Site Planners, Landscape Architects, Planning and Research Consultants—explains in this article the firm's philosophy, organization, and working methods.

Specialist's Services in Land Design

It is not unusual today, in large-scale projects, to have a number of architects working together, each assigned to a separate building. To co-ordinate their efforts, to discover a unifying design, requires a "third party" perceptive enough to understand the different architects' concepts, and yet at the same time able to find the best means for achieving a good building-to-building relationship. Because he has been trained in the heritage of landscape architecture, a landscape architect can effectively work under these conditions and blend beauty, amenity, and economy, and at the same time obtain the most effective use of the land.

There is no reason why an architect could not perform this function; in many instances architects are doing such "planning." As in any design field, it does not matter what the person is called, for he defines what he is by what he does.

If there is an understanding of the total design process involved in the operation of a project, little difficulty is encountered between the architects and other professionals; for in analyzing the site and moving down the design scale to the erection of the building, a point is quickly reached where all of those working forget their professional status and concentrate on the problem in which they are involved. It is self-evident that no profession has cornered the market on intelligence. In design problems of this kind, whether of an engineering or site nature, the issues are often resolved through an immediacy of response and intuition that comes more from experience than from a professional label. However, through the architect's inclusion of specialists the ultimate design has a better chance to become a fuller completion of a total synthesis. Ease of transportation and communication has made it unnecessary for the architect to maintain this kind of specialist knowledge within his own staff. He may use such services only at the time when they are most helpful.

Because land is becoming recognized as a precious commodity, and because it is the nature of omnipresent technology to engender specialization, there is a growing opportunity for an office practice devoted to these concerns. The emergence of this specialist practice is not another sign of the dissolution of architecture as a profession. Historically these are design areas which are rooted in the traditions of landscape architecture; economically the everyday constraints in a project development make it unlikely that such services would be used where they duplicate resources and staff that the architect himself can provide; and in common practice it is often the architect who engages the specialist firm in ways and means that are similar to contracting for other technical help in the development of a site or building.

As a matter of convenience the operational areas of a land-design office should be briefly outlined before describing how one such office is organized and functions.

Planning design or "*master planning*" is the analysis and refinement of the over-all planning context as it relates to the physical development of a site or project. This includes such things as the redefinition of the program and policy in design terms; an examination of the physical connections of the site to its environs; and a consideration and evaluation of the over-all circulation system, land use patterns, zoning, and other factors which would affect the eventual design of any area.

Site planning and design are the process by which the buildings and other elements required by the program are fitted to the site so that the whole functions properly and achieves an expressive form. Adjustment of the building to the site, provision of proper access to and circulation within the site, grading for visual effect as well as for drainage purposes, and the preservation of natural amenities of the site are typical examples of functional considerations which are necessary in this area of activity.

Landscape design can be considered as the articulation, shaping and forming of that extension of the architectural *parti* which is the exterior space around the building. Professional services rendered in the initial phase would begin with a careful analysis of existing amenities on the site. The design plan or suggestions that follow might include the warping and changing of the ground plane; the addition of man-made materials such as terraces, walks, benches, etc.; the selection, transportation, and placement on the site of plant materials such as trees and ground cover; and the design melding through full use of all of these into a compositional form.

Based on the nature of the problem, the kind of help requested, the duration of the specialist's help, the client's budget, and the amount of staff work involved, there are three general methods by which an office can provide the above services.

Consultant services. In these instances, the consultant is asked to bring to a problem ideas and acumen that are based on experience in a similar situation. An illustrative scope of work would include a review of the client's needs and problems, a site visit with the client and discussions with his staff, a review of the design, and preparation of a report evaluating the situation and recommending certain procedural or design changes.

Government agencies, institutions, and corporations are typical clients for services relating to planning design, master and site planning; while developers and architects usually request landscape design assistance.

Project services. While consultant services are usually handled by the principals and their senior associates, with little if any staff work involved, a contract for project services implies the full commitment of the office's resources.

A typical example would be the preparation of a landscape plan for the development of a research center. A work program in this case would consist of a site visit, consultation and coordination of work with other professionals working on the project, a preliminary design phase, a series of reviews and revisions, a final design phase, the production of working drawings, and supervision of the executed plan.

More often than not, the client in these cases is the architect, with the specialist acting as subcontractor to him. Occasionally the consultant may be engaged by the client conjunctively with the architect; for example, in the preparation of a landscape development plan for a master plan study of a university.

Development services. In some respects these are similar to project services in the substance of the work performed, but differ because the specialist is the prime contractor and is responsible for the organization, co-ordination, and programming of the project. Because some aspects of such a project may lie outside the office's competency, the office will add to the staff experts in architecture, engineering, etc., depending on the types of problems that must be solved. Most development services are related to planning design, master planning, and the preparation of landscape development plans.

There is no formula for handling these projects, but a typical work program—for example, a university master plan—would consist of the initial client contact phase, the evaluation of his problems, and the writing of a proposal and work program for his approval. On the acceptance of this proposal, the project would be staffed, and an internal work program and schedule issued. The first work phase usually entails considerable analysis and research for the project, and the preparation of preliminary designs and programs. This is usually followed by several review sessions with the client and a refinement or revision of the design concept, as well as planning recommendations. Normally the final work phase would include the preparation of program and plan graphics and a terminal report.

While there are exceptional opportunities today for establishing a specialist office which offers the services described above, there are also unique problems associated with the management and conduct of such a practice.

First, there is the problem of staffing and holding together a group of talents which share a common view towards the problems of land design, and who not only are technically competent in their own professional areas, but are also attuned to what is going on in parallel professional fields.

Secondly, the health of the practice depends on each individual participant growing and enlarging his capacities through experience and contact with the practical as well as the theoretical.

Thirdly, a successful office must also be flexible enough to handle the sudden and unpredictable short-term client demands and problems, as well as the more manageable projects which can be scheduled and staffed over a period of time with greater certitude as to what needs to be done.

To meet these desiderata, Sasaki, Walker & Associates use the project manager system in the day-to-day operation of the office, with many of the staff also in teaching or in research. The work is carried on by a core staff composed of the principal, his associates, and a supporting group of designers, draftsmen, and assistants.

In a descriptive sense, this would appear to be a large office, but the work is carried on by a relatively small staff, as the associates have many roles in this system. They may serve as project managers, project captains, or simply as staff, depending on their individual backgrounds and experience, and the nature of the problem or project which is under contract.

In this system Mr. Sasaki serves as chief design critic to the project managers and their project groups. In addition, he serves as chief consultant for the office—usually with a senior associate as his assistant—and represents the office in the initial contact phases of many of the projects.

The daily routine, scheduling and work assignments, and establishment of office policy are handled at periodic meetings of the associates and the principal. The executive director acts as coordinator between these meetings.

Teaching and research are the other important activities of the office, because they complete the natural cycle of intellectual inquiry and the design continuum which runs from the academic to the practical and back again.

The office engages in research in order to afford the staff the chance to add those fresh insights and ideas that come from theoretical problem analysis to the accumulative web of experience which is built up through participation in a series of client projects. Research falls into two categories: project research and design research.

Project research is the use of the office library clip files, documents on plants, illustrations of construction techniques, and any other materials that are gathered together and used for solving whatever problems the individual may be working on at a given moment. It occasionally requires some original research, but more often than not it is synthetic and directed toward a specific goal.

Design research tends to be of a longer duration and usually involves people who are trained in the methods and procedures of research.

From the office's viewpoint, the aims and goals of both project research and design research are similar:

(a) To provide analysis of design in depth as well as breadth.

(b) To create a stockpile of ideas.

(c) To freshen outlooks on design by discovering new correlations and relationships that may have been glossed over in a stereotyped approach to the problem.

This is venture capital in ideas, something which the office thinks is necessary in undertaking projects having social significance and responsibility.

Members of the office are also encouraged to participate in teaching activities. Thus, the continuum of teaching, practice, and research becomes complete. Mr. Sasaki is the Chairman of the Department of Landscape Architecture in the Graduate School of Design at Harvard, as well as the principal of the firm.

As to size, during the first half of the year, the Watertown core staff consisted of the principal, eight site planners and landscape architects, two planners, an architect, the equivalent of eight draftsmen, a research assistant, and a two-girl secretariat. The San Francisco office, under Mr. Peter Walker's direction, had three full-time professionals.

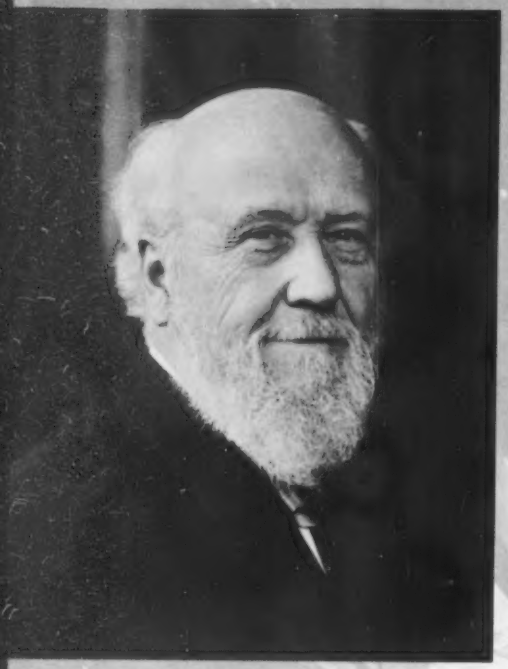
It is probably too early to tell whether Sasaki, Walker & Associates is indicative of an emerging trend towards increasing specialization in environmental design. It is a young office, attempting to meld the theoretical, the academic, and the practical. In this respect it may be, to paraphrase the philosopher Irwin Edman, "on the borderline between beauty and utility, where art is ambiguous and crucial."

As a Special Feature for our Readers, eight pages from an exceptional Reinhold book listed for publication later this month have been chosen by P/A Editors for reproduction here. Photographs for the book were made under supervision of the Author by a number of photographers: notably Wayne Andrews, Roy Flamm, Marvin Rand, Julius Shulman, and Lloyd Yost.

FIVE CALIFORNIA ARCHITECTS

ESTHER McCOY

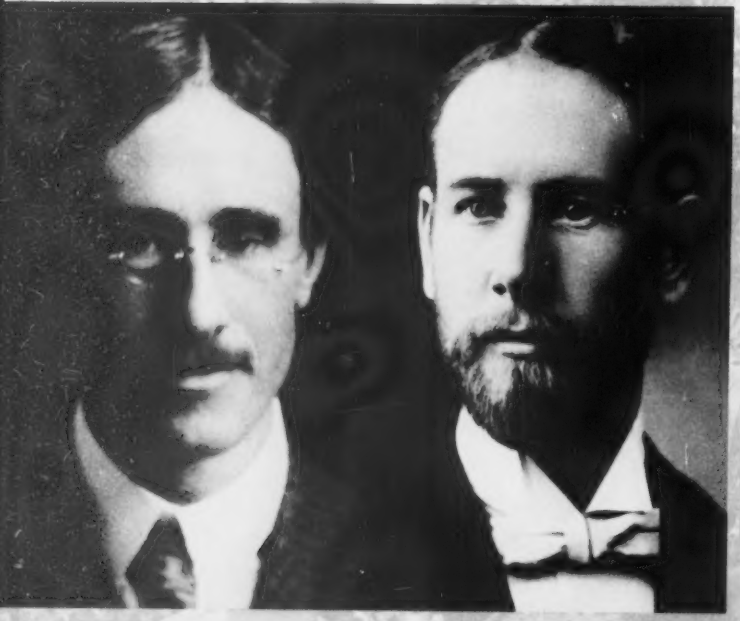
REINHOLD PUBLISHING CORPORATION, NEW YORK



BERNARD MAYBECK

IRVING GILL

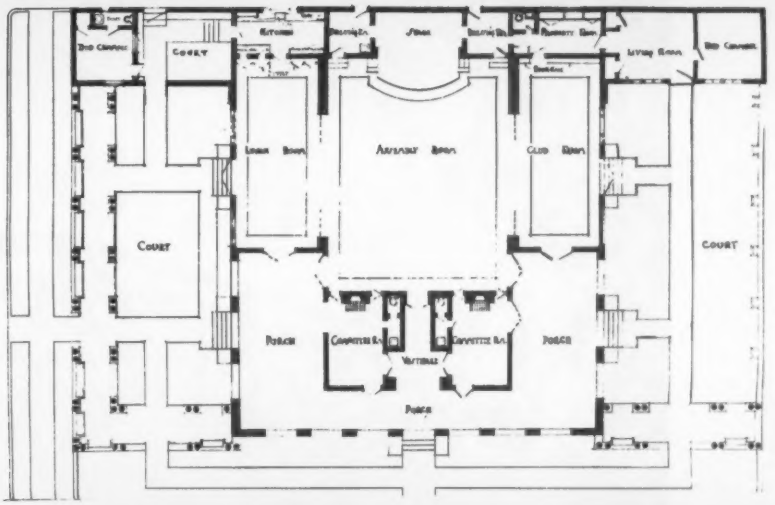
CHARLES and HENRY GREEN



R. M. SCHINDLER

Side view and detail, Christian Science Church. Maybeck called this church—recognized today as one of the great works of modern architecture—a creation in the spirit of the past; in it he used only the most modern industrial materials available. The novelty of factory sash and asbestos panels has faded; there remains only Maybeck's incomparable skill in composing them into an enduring piece of architecture.

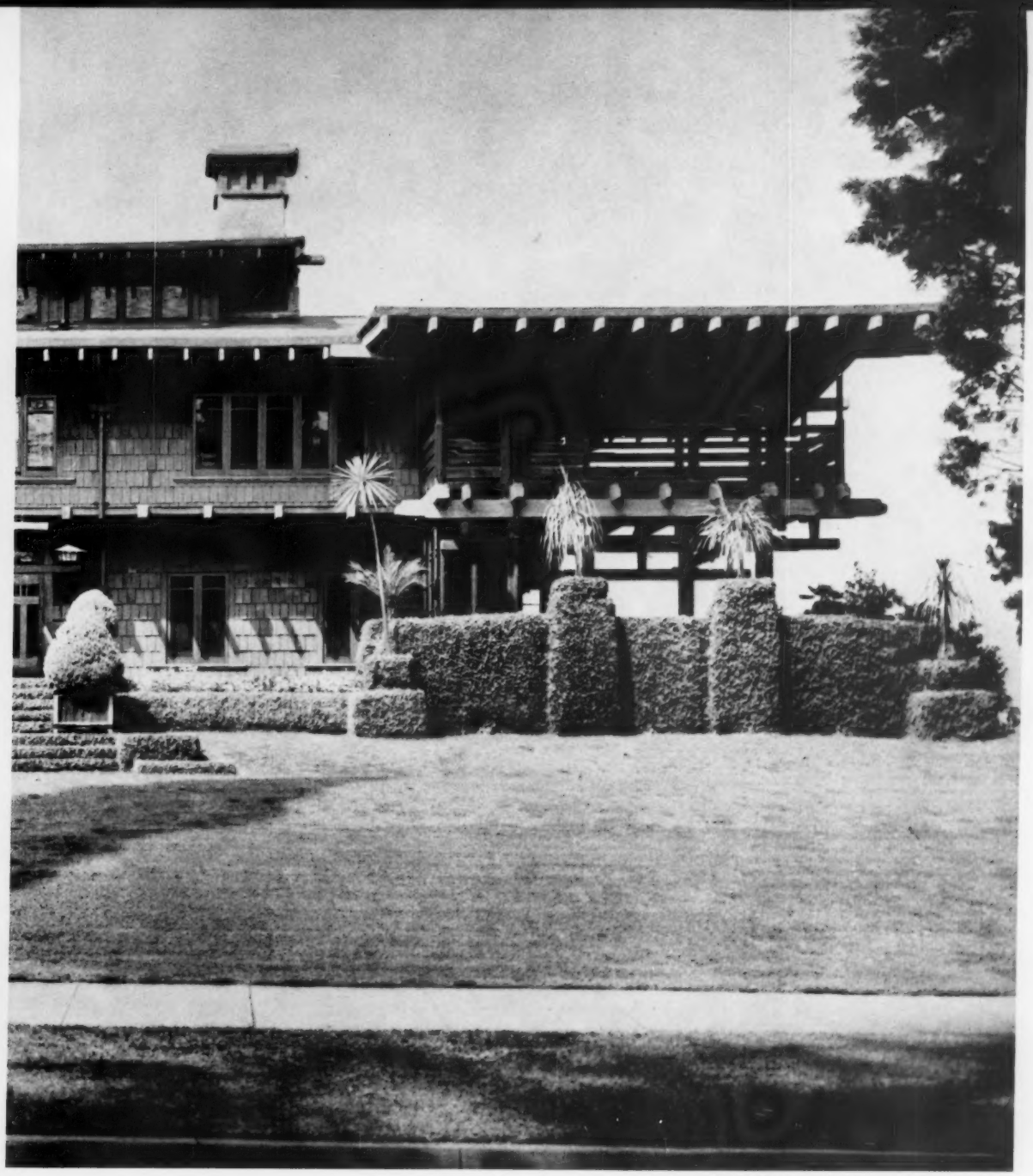
Gill's interest in the total plan is best revealed in the garden environment in the Women's Club. His ambition to make concrete widely acceptable was realized to a great extent because of the natural settings he created around his buildings.



An arcaded porch of the Women's Club led to a pergola.
←

Entrance door, Women's Club.

The best preserved of all the Greenes' fine works is the David B. Gamble residence on Westmoreland Place, Pasadena. Very little has been changed since the original construction. Furniture, carpets, lighting fixtures, silverware, picture frames, linen, etc., all designed for the house by the brothers, remain in excellent condition. Here was the refined application of the sleeping porch, which became the most dramatic element of the house. No detail was left to the discretion of the carpenter; every peg, oak wedge, downspout, air vent, opening and fixture was designed into the whole. The interiors were paneled throughout in mahogany. The elaborate



David B. Gamble house, Pasadena, 1908.

stained glass detail in the lighting fixtures were designed by Charles Greene and executed by Judson Studios. Instead of the usual leaded joint, the brothers developed their own method of putting the pieces of glass together. Tiffany glass, imported stained glass, and local glass were first wrapped on all edges with copper which molded onto the surface of the glass, then the parts were soldered together. With all in place, the joints were treated with a solution of bluestone, which turned them a soft coppery green color. The effect was that of fine aged stained glass work.

In the Sachs apartment house, Los Angeles, 1928, Schindler turned from concrete to studs and plaster—his first attempt to develop his own vocabulary within standard framing. Each apartment had an entrance from the street and a glass wall facing a living porch.

HEALTH FACILITIES

The steady progress of medical science and the current reshaping of community needs call for continuous change in our health facilities. New techniques of inpatient care lead to innovations in hospital planning. The organization of outpatient care to serve the total needs of the individual is reflected in the evolution of the clinic. The three hospitals and three clinics presented on the following pages express these influences in architectural form.

Part I
Hospital Care

All of the three designs presented here incorporate carefully re-studied nursing facilities. The first, by a firm in general practice, illustrates advancement within existing standards; the second, by a noted firm specializing in hospitals, introduces unusual plan features to increase efficiency; the third, a master's thesis, proposes a thorough redesign of the nursing floor.

Litchfield County Hospital (right).

Photos except as noted: Joseph W. Molitor

BUILDING ON PRECEDENT

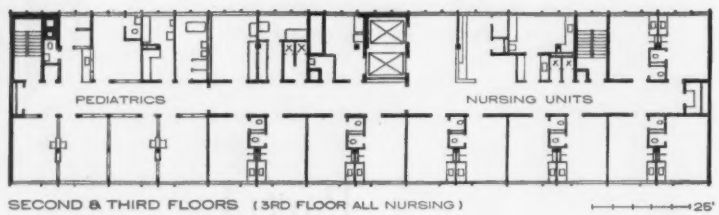
LITCHFIELD COUNTY HOSPITAL • WINSTED, CONNECTICUT • SHERWOOD, MILLS & SMITH, ARCHITECTS

This 86-bed community hospital represents a refinement of currently accepted planning standards. The site, on the edge of a hill, is partly occupied by a 60-year-old hospital building, which has been retained for the present to house auxiliary functions.

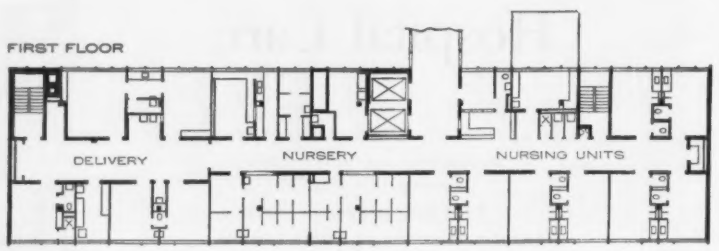
The limited area of the site, the slope to the south, and the location of a busy road to the east dictated the long, single-corridor building running along the contours. The south wall allows maximum exposure to the sweeping view; the windowless east end wall affords protection from the noise of the road.

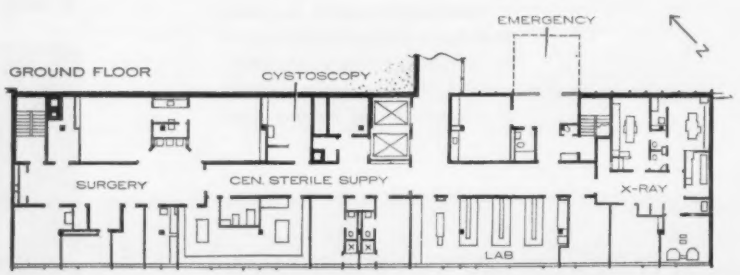
The hospital is organized on five floors; a three-level glazed corridor connects the lower floors and the old building. The kitchen, housekeeping, storage, and other service facilities occupy the basement, at the delivery entrance level. The ground floor, at the ambulance-entrance level, houses emergency facilities, operating and recovery suite, central sterile supply and laboratories.

The entrance from the public parking



SECOND & THIRD FLOORS (3RD FLOOR ALL NURSING) 25'





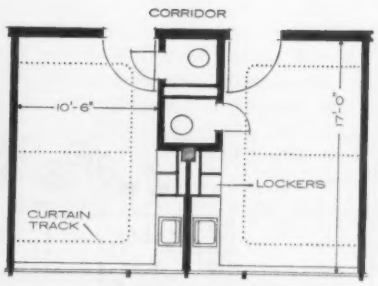
Robert Stahman

Windows extending entire width of typical double room offer views of countryside.

Three-foot overhang provides sun control on south side of typical nursing floor.

Robert Stahman

Counter lavatory, storage cabinet, and door to toilet occupy wood-paneled wall.



NURSING UNIT

Natural wood is used for nurses' station; ceiling is suspended acoustical panel.

area is at the first floor. The obstetrical department, including delivery and nursing facilities, is located on this floor for easy visitor access.

The second floor is devoted to medical and pediatric patients and the third, to surgical patients. A solarium is planned for the penthouse.

Each nursing floor is laid out along a single corridor. Almost all of the patients' rooms face the south; ancillary spaces are located on the north. All rooms are designed for double occupancy, which was considered most appropriate for the small, privately supported hospital. The use of a standard unit of two rooms, with toilets located between them, permits close integration of structure and services.

Each room has one wood-paneled wall containing storage facilities and a counter lavatory. An audio-visual system with call-back features connects each room with the nurses' station.

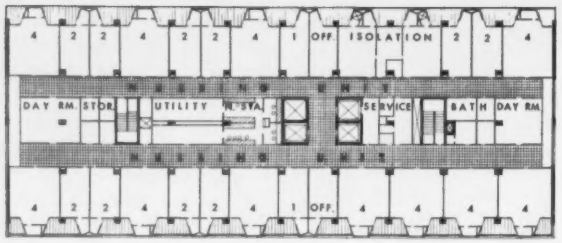
In the pediatrics area, central toilets are provided instead of private facilities. The in-room lavatory is retained, and glazed partitions are introduced in the corridor wall.

The structure is of the lift-slab type; the 8½"-thick prestressed-concrete slabs, supported on 14 steel columns, span 26 feet in both directions and cantilever 8'-8" to the north and south. The architects consider the use of the lift-slab system to be "particularly successful for this type of building." Marchant & Minges were structural-mechanical engineers for the building.

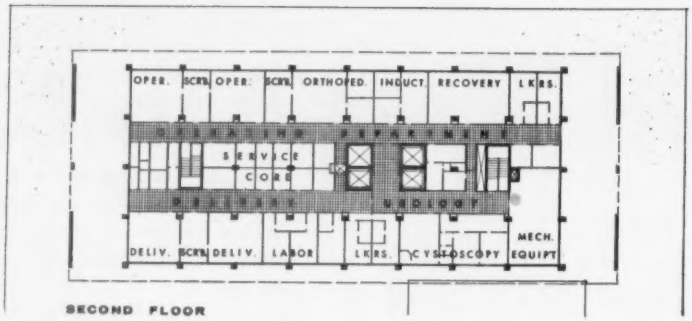
The exterior curtain walls on the south and north are completely free of structural members, allowing for glass the entire width of the patients' rooms. The porcelain-enamel spandrel panels are blue and gray. On the south side, the floor slabs have been extended three feet beyond the curtain wall to provide sun control.

Interior walls are of plaster on gypsum block. Floors in the nursing areas are of vinyl tile (the architects commented that the use of terrazzo for corridor floors might have been preferable, despite its higher cost). Ceilings in the patients' rooms are acoustical tile cemented to the slab; corridors have suspended acoustical-panel ceilings.

Rooms are heated by fin tubes in metal enclosures along the outside wall; mechanical ventilation is provided for toilets and service spaces; windows provide natural ventilation for the rooms.



FIFTH FLOOR



SECOND FLOOR

EXPLORING CURRENT TRENDS

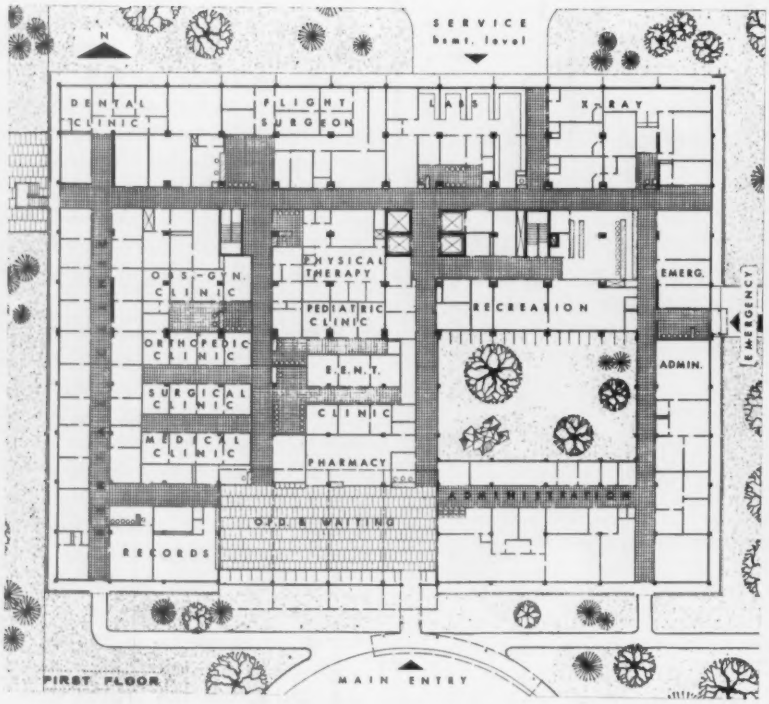
U. S. AIR FORCE HOSPITAL • CLARK FIELD, PHILIPPINES • BELT, LEMMON & LO AND ISADORE & ZACHARY ROSENFIELD • ARCHITECTS AND ENGINEERS

Since 1957, the Air Force has been free to depart from standard plans previously applied to all military hospitals. This design for a 200-bed hospital makes the most of this freedom, incorporating an improved nursing floor plan and distinctive adaptations to the tropical climate. The architects cited the effective collaboration of the Air Force Surgeon General's staff in evolution of the design.

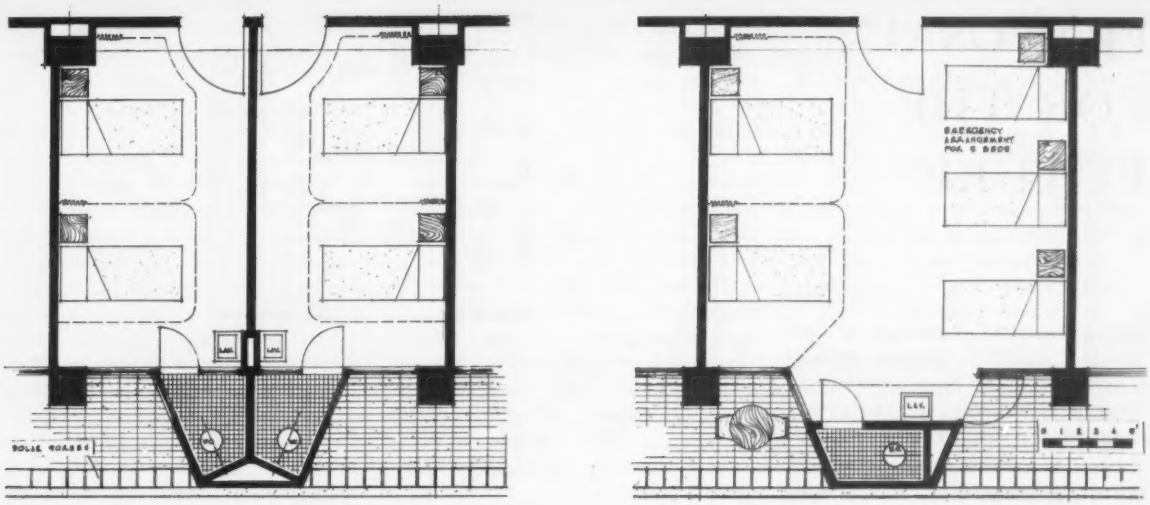
Since this hospital must serve all the medical needs of the personnel and dependents on the base, it has all the elements found in a community hospital (except for the laundry, which is sited centrally to serve the entire base). The principal point of difference from civilian hospitals is the inclusion of a larger outpatient department, along with a flight surgeon's clinic and dental clinic.

The nursing floor layout represents a departure from the conventional in that the toilets are located along the periphery of the building. This location, outside the rectangle of the room, minimizes the distance from corridor to bed, eliminating the usual circulation trap at the entrance to the room.

The space thus saved was used to advantage in the balconies. Aside from their function as welcome recreation spaces, the balconies provide sun con-



FIRST FLOOR



Two types of accommodations are provided within the typical bay. Location of the toilets on the periphery of the building permits more direct circulation from room to corridor. Size of rooms allows three beds to replace each two shown, in emergency situations.

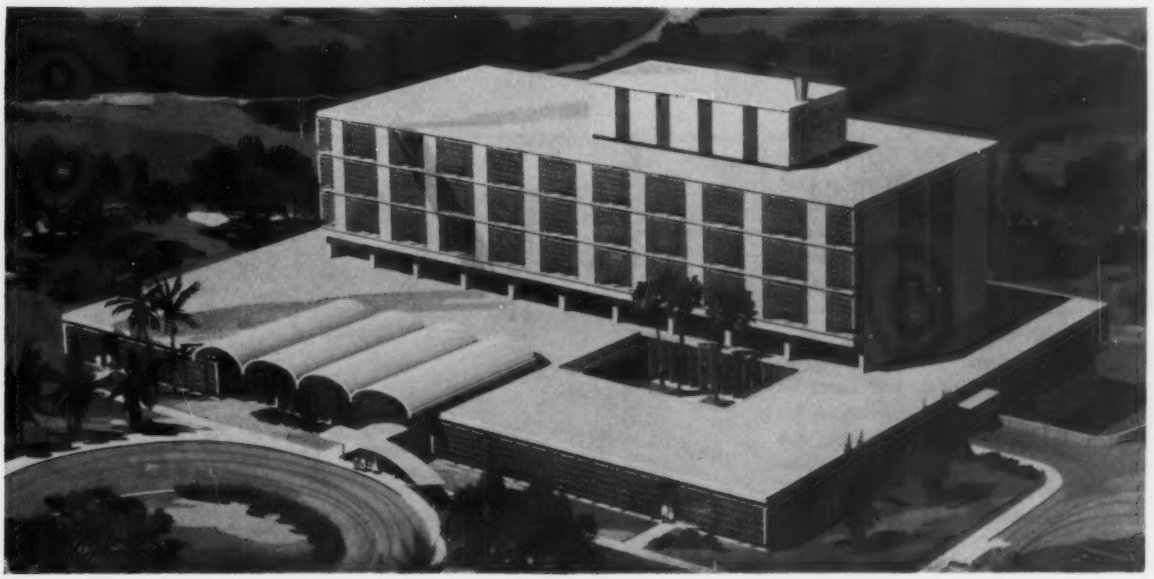
trol, vitally necessary in this climate to keep air-conditioning loads within reasonable limits. To further reduce sun penetration, the balconies are equipped with sun screens which will be fabricated of 12″ asbestos-cement ribbon (a Philippine product).

The dimensions of the room would permit three beds to replace each two shown on the plan, within Air Force standards for emergency conditions. Thus the hospital has an effective emergency capacity of 300 beds.

Each of the three nursing floors has two corridors, each corridor serving a unit of approximately 35 beds. Separate nurses' stations, utilities, and ancillary functions are provided for each such unit; common facilities would have proved more economical, but in this case discipline and asepsis were the primary considerations. Nurses' stations, however, are arranged for easy intercommunication, so that one night crew can serve an entire floor if necessary, and nurses can be shifted from one side to the other in emergencies. Day rooms, located at either end of the nursing floors, open out onto large balconies.

The second floor is devoted to surgery, delivery, cystoscopy, and related services. The smaller area of this floor serves to articulate the separate departments of the hospital as seen from the exterior.

The ground floor is a large square in plan, with an interior garden court. The vaulted lobby-waiting room and the patients' library and lounge look out into this courtyard. This floor houses the outpatient department; X-ray, laboratory, physiotherapy, and emergency facilities; and administrative offices.



PROPOSAL FOR THE FUTURE

MASTER'S THESIS: UNIVERSITY OF MINNESOTA • ROBERT H. LEVINE • ADVISORS: R. RAPSON, R. CERNY IN ARCHITECTURE; J. STEPHAN IN HOSPITAL ADMINISTRATION; P. ANDERSEN IN CIVIL ENGINEERING

The object of this study was the design of a prototype general hospital with clear definition of departments, straightforward circulation between them, and provision for orderly expansion. Particular attention was given to designing an efficient and flexible nursing floor.

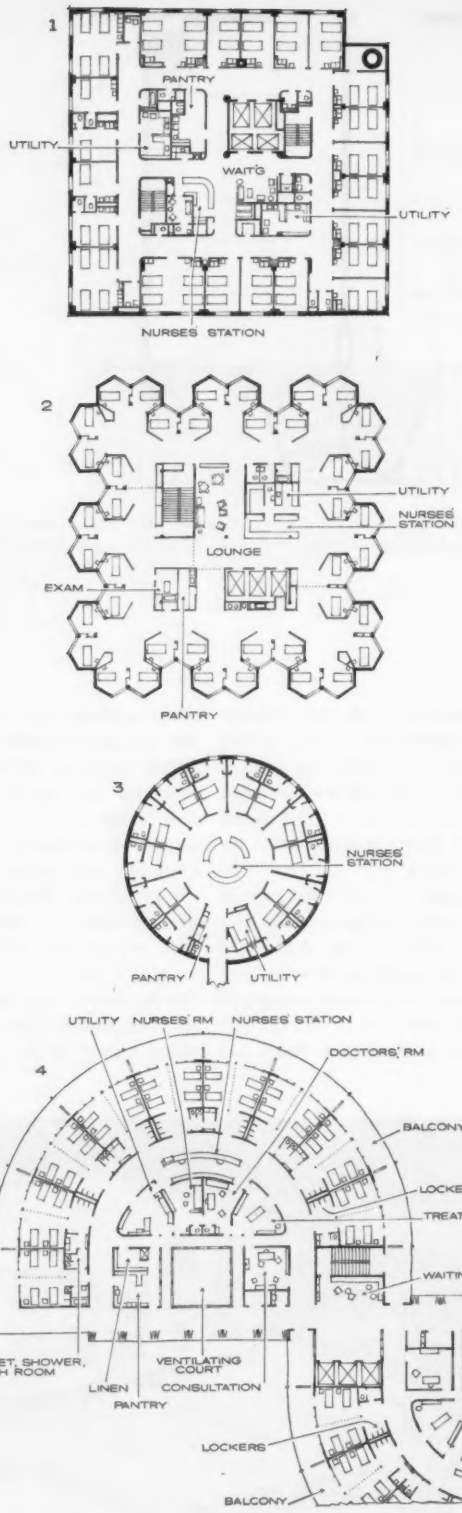
A capacity of 200 beds, expandable to approximately 350, was considered suitable for the study. A site of about two city blocks in area was assumed; since conditions of topography, view, access, and architectural environment were not established, adaptability of the scheme was essential.

The single-bed room with private toilet, adopted as the basis for this study, offers many advantages. To the patient it allows freedom in receiving visitors, watching TV, lighting, use of toilet and washing facilities, and individual climate control; to the hospital staff it allows flexibility in the assignment of rooms and the possibility of on-the-spot examination and treatment. Planning for single occupancy, however, often results in greater area per patient, longer traffic routes, and problems of supervision and control.

The trend toward early ambulation, allowing the patient who feels sociable to circulate among rooms or use lounge facilities, has reduced the appeal of the multibed room. Long-term and maternity patients, however, can still benefit from the companionship of a roommate.

The current popularity of the two-bed room—ineptly called "semiprivate"—is a result of unrealistic price differentials, insurance-plan provisions, and memories of delayed ambulation. High rates for private rooms result in part from the practice of designing them to be convertible for double occupancy.

The progressive-care system for patients, which has recently won considerable acceptance, introduces many diffi-



1, *Euclid-Glenville Hospital, Cleveland, Ohio: Conrad, Hays, Simpson & Ruth.* 2, *Davis Medical Foundation, Marion, Ind.: Weese, Adams, and van der Meulen.* 3, *Intensive Care Unit, Methodist Hospital, Rochester, Minn.: Ellerbe & Co.* 4, *Study, Jerusalem Medical Center: Joseph Neufeld.*

culties. Dispersal of patients with one type of illness presents a problem for the medical specialist; nurses are often reluctant to treat only intensive-care patients and miss the satisfaction of "seeing the patient through." Shifting of patients from one area to another is inconvenient for all. Progressive care was not made a basis for this design, but adaptability to it was required.

The team nursing system, an outgrowth of the short supply of registered nurses, allows one professional nurse to handle as many as 10 patients, with adequate non-professional assistance. Efficient operation of such a system requires concentration of control near patients' rooms in order to minimize circulation and allow visual control. Head nurses now supervise as many as 72 beds in a normal day shift; such centralization demands short distances and simplified control.

Some adjunct facilities can be decentralized advantageously onto nursing floors: dining and recreation facilities on the floor enhance early ambulation; minor laboratory and therapy facilities eliminate the need for the disabled patient to be taken on long trips to central facilities.

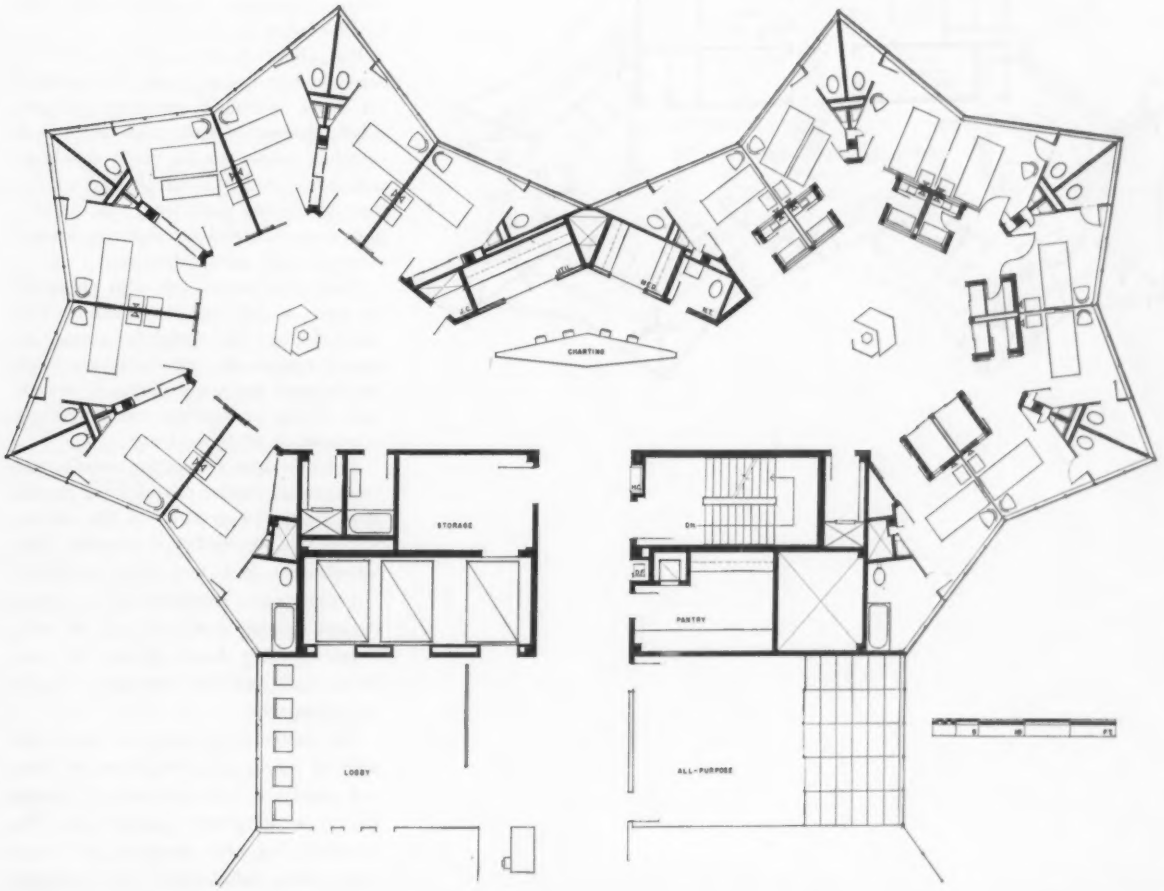
Conventionally, the nursing floor has been laid out along a single corridor. As sizes of floors have increased, efforts to limit internal distances have produced many plan forms—the well-known T, Y, H, and X configurations. The double-corridor scheme provides space for services and ancillary facilities between the two corridors, shortening circulation routes and reserving desirable peripheral spaces for patients' rooms.

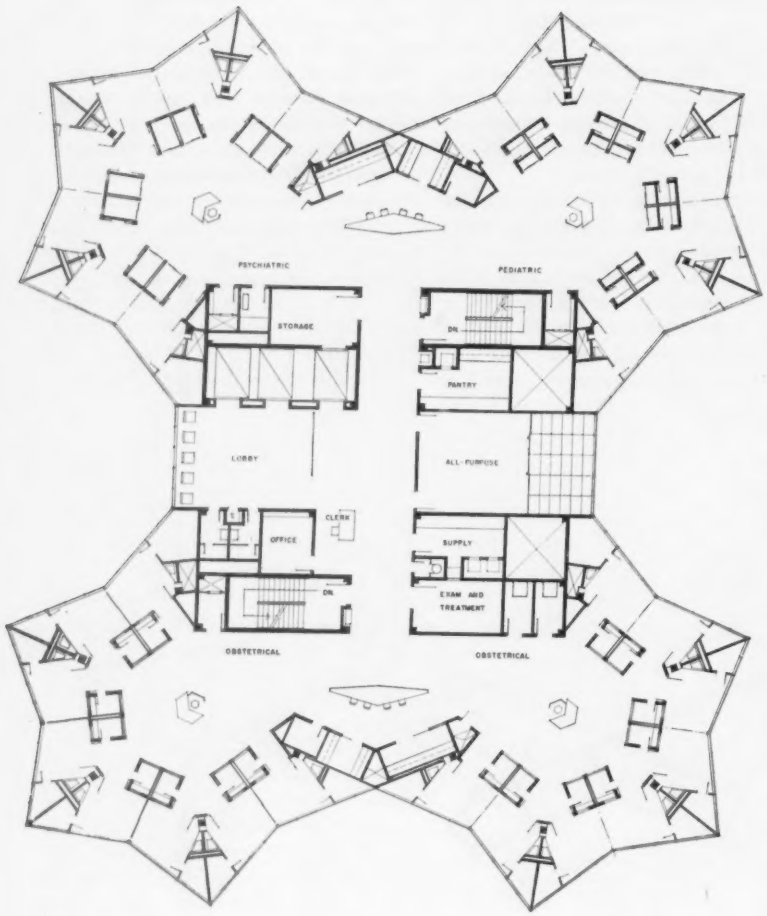
Centralized plan forms decrease perimeter-to-area ratio and shorten circulation routes to a minimum 1, 2. Ancillary facilities can be located in the core, a convenient location, though undesirable for some functions. Circulation patterns and control in the core area are often confusing; nurses object to the limited visibility of curved or angled corridors.

A further consolidation of the central plan affords excellent supervision 3, but the size of the floor is severely limited and access to ancillary facilities and vertical circulation is difficult. Some variations of the central plan show promise; one scheme, using the half circle, offers most of the advantages of the central type of plan yet provides outside exposures for ancillary facilities 4.

The design of a nursing unit for the prototype hospital was based on the number of patients one registered nurse could handle. Because of the flexibility in degrees of care assumed for this study, estimates of this number varied from 6 to 12. The eight-room unit which was finally evolved is of modified hexagonal form, with two rooms on each face. Four such units comprise the 32-bed floor, which affords convenient circulation and unobstructed views from all rooms.

This plan allows flexibility in staffing;





one nurse can be charged with 8 patients or 16—or even 32 for night duty or convalescent care. Control may be exercised from the central supervisor's or clerk's desk, from nurses' stations, or from movable desks in each unit, as required. The small number of patients served by each charting desk helps to alleviate congestion at peak consulting hours. Circulation and control of staff and visitors is clear-cut. The flexibility in assignment of private rooms would permit a high rate of occupancy.

The plan of the rooms allows for a maximum of space near the door, where it is most needed; the location of the bed provides a good view for the patient. A glazed panel near the door, which can be curtained for privacy, allows for visual supervision by nurses and offers the patient a wider view of the corridor. The toilets are located so that they do not obstruct circulation.

The unusual shape and the domestic scale of rooms and corridors serve to relieve them of institutional atmosphere. From the exterior, the tower has a crystalline form, with each room individually expressed. Area utilization, with 51 percent of area going to partitions and corridors, compares favorably with the USPHS norm of 54 percent.

The plan can be readily varied to accommodate special uses. For obstetrical floors, individual nurseries are provided, observable from both room and corridor; rooms can be made double at will, but may be closed off part of the time by sliding partitions; the all-purpose room is useful for lectures, demonstrations, and group therapy.

Pediatrics rooms are also designed for part- or full-time convertibility. The small cubicles are useful for storage of special equipment; the all-purpose room can be used for group dining or recreation. Pediatrics facilities can be readily converted to obstetrical use.

A double-door system for security and noise-control can be provided for psychiatric cases. Observation of the patient without his knowledge is possible. For convalescent and long-term orthopedic (traction) cases, convertibility of single to double rooms is also offered. In every instance where double rooms are provided, light and view are equal for the two occupants.

The geometrical clarity of the design allowed for a close integration of form and structure, with a structural design which is inherently economical. The structure has been designed as a steel frame with cellular-steel floor decking

and light curtain walls. The cellular floors proved readily adaptable to the plan, can be utilized for mechanical services, allow fast erection, and are light in weight. The exterior wall treatment gives a sensation of lightness from within, highly desirable in a small room.

Within the hexagonal units, the floor load is carried by 24-inch girders. These are supported approximately at the fifth points, equalizing their positive and negative bending moments. Since the columns are at the approximate centroid of their loading area there is little eccentricity; the columns can be held to a maximum dimension of 12 inches. In the core area, close spacing of columns allows shallow beams.

A high-velocity system supplying 100 percent fresh air at a fixed temperature, year-round, is proposed. From intakes around an open court at the basement level, fresh air is routed through equipment at that level and vertically into the tower, where abundant shaft space is available for all utilities.

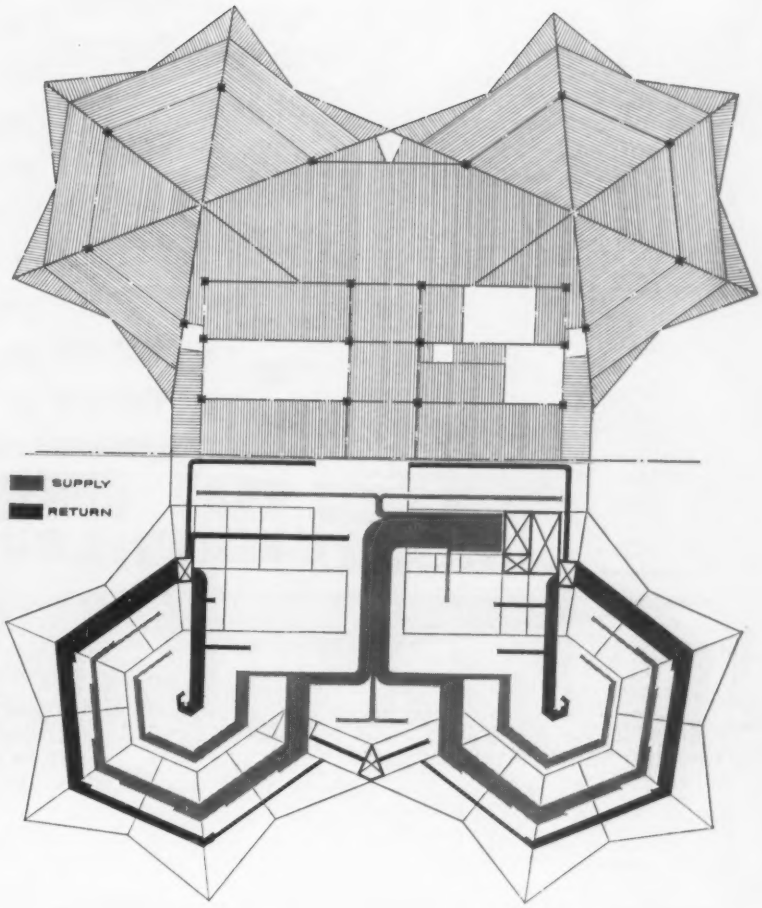
At the nursing floor, ducts are required only in the central service core (where beams are shallowest). Air is routed to rooms through the cellular floor and returned by similar means from toilet and ancillary spaces, to be exhausted through the roof. The cellular-floor system accommodates itself readily to variations in plan.

At the room, the air is deflected into a plenum created by the hung ceiling. Narrow, adjustable grills along the sides of the room insure good air distribution and provide an uncluttered upward view for the patient.

The nursing tower of this prototype hospital contains eleven nursing floors, one devoted to pediatrics, one to convalescents, two to obstetrics, and the rest to medical-surgical use. The design provides for an initial stage in which only the lower seven floors would be finished. It would be advisable, however, to erect the entire structure at once, for economy and to reduce noise and maintenance problems during expansion.

Adjunct facilities, services, and parking are located on three levels below the nursing tower. The horizontal circulation pattern within each of these areas serves to clarify circulation between them and the vertical nursing tower.

To allow freedom in the design of these lower levels, that portion of the structural load which is not carried by the central rectangular grid is transferred to four columns by means of two-story Vierendeel trusses which are an



Rendering: James McBurny

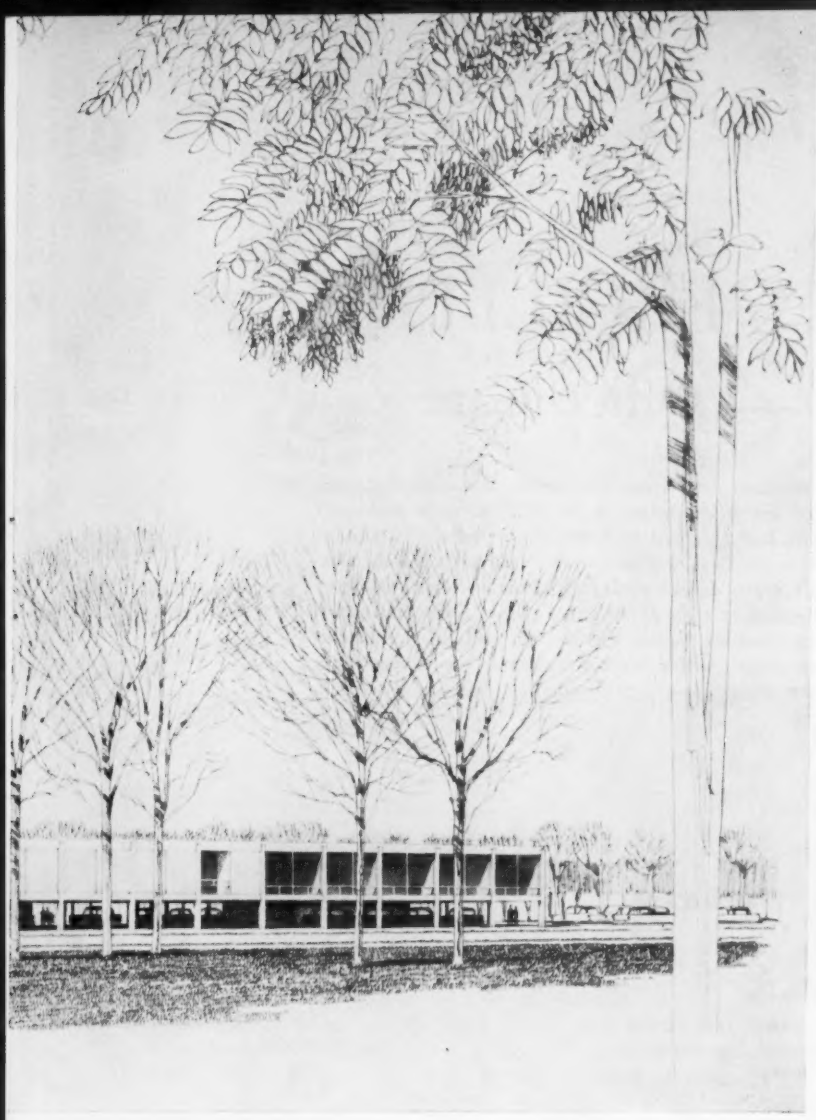
integral part of the lower nursing floors. Again, concentric loading allows a minimal dimension for the columns (24" square in this case). The expense of the mat foundation required for this scheme would be justified by the saving in space and materials, as well as the flexibility of planning the lower floors, for which a 21-foot structural module proved most suitable.

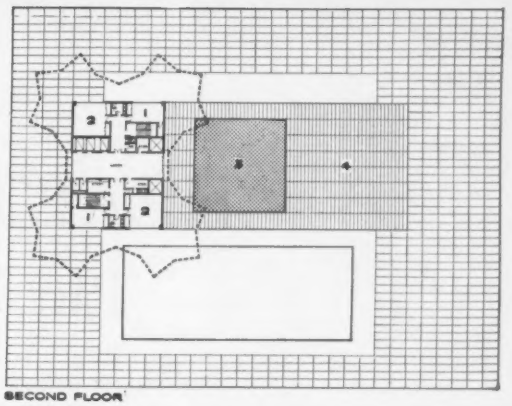
The second floor serves as a transitional level; it is used for intern, resident, and on-call quarters and provides access to the roof-top recreation area. The reflecting pool and tile terrace relieve the expanse of roof as seen from the tower. The pool location is calculated to keep active recreation space at a distance from the tower. The location of the convalescent floor on the level above affords easy circulation and control and further reduces disturbance to the seriously ill patients.

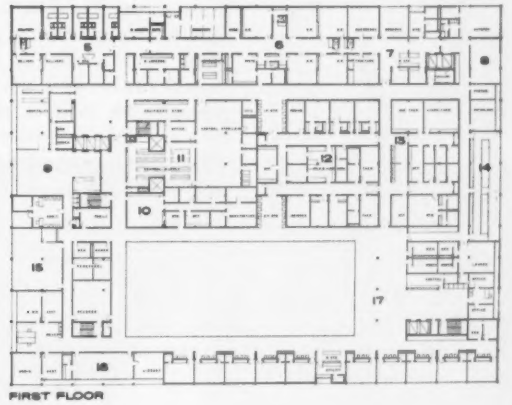
All adjunct facilities are consolidated on the first floor. The plan reflects a current trend toward the expansion of such facilities. Outpatient referrals for elaborate diagnostic and treatment procedures are increasing; shorter periods of inpatient care are placing heavier demands on these facilities relative to the number of patients.

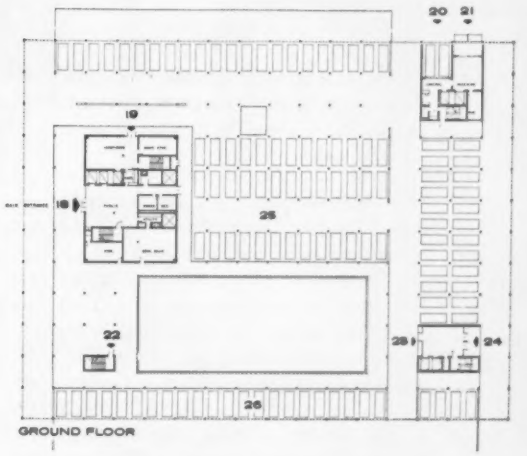
The entire ground level is devoted to parking and entrances; this scheme permits effective distribution of traffic and frees the site from the usual sea of cars. Separate entrances are provided for patients, public, staff, and employes, as well as emergency and delivery traffic, each convenient to its eventual destination. Careful attention was given to integrating circulation at this level with that of adjacent levels. Location of delivery and emergency entrances minimizes disturbance to the nursing tower. The public lobby provides a convenient point for directing elevator traffic to the proper floor. The inpatient lobby also functions as a control point; the routines of admission and discharge are performed in the privacy of the patient's room.

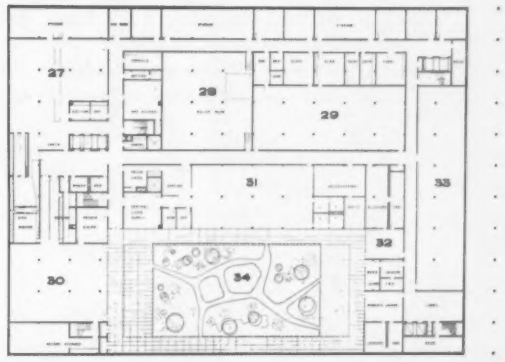
Service facilities are located in the basement. Dining, employe lounge, and laundry areas are grouped around the landscaped court; the laundry and kitchen are convenient to the nursing tower elevators; expansion space, intended primarily for radiology and laboratory functions, is convenient to service and outpatient elevators.











1	resident	18	public
2	internes	19	inpatients
3	reflecting pool	20	emergency
4	recreation	21	delivery
5	delivery	22	staff
6	surgery	23	employes
7	emergency	24	outpatients
8	pathology	25	staff, employe parking
9	visitors' lounge	26	doctors' parking
10	pharmacy	27	kitchen
11	central supply	28	boiler
12	radiology	29	mechanical
13	therapy	30	dining
14	laboratory	31	laundry
15	administration	32	lounges, lockers
16	staff lounge	33	expansion
17	outpatients	34	courtyard

HEALTH FACILITIES

Part II — Office Care

Three superior architectural solutions for office-care facilities, two medical centers and a clinic, are presented on the following pages. In each case, the architect's solution was based on the individual problems presented by the particular kind of medical organization or practice. The first medical center shown is owned co-operatively by physicians in private practice, who each have individual units and personnel. In the clinic, which is owned by eight physicians, business, X-ray, laboratory, waiting-room facilities, and personnel are shared. The medical center for a partnership of physicians with a large group practice is a comprehensive community health center, equipped with extensive diagnostic and treatment facilities which no individual practitioner could afford.

PRIVATE PRACTICE

BELLINGHAM MEDICAL CENTER • BELLINGHAM, WASHINGTON • GALEN W. BENTLEY, ARCHITECT • NORMAN H. OLSEN, ASSOCIATE

This medical center is a co-operatively owned project, built for doctors and pharmacists who have private practices and businesses which require varying individual units. The center offers both physicians and patients the conveniences of centralized medical services, a pharmacy, and plentiful parking in a pleasant setting.

The owners wanted one-story-high buildings for direct access to all offices. Twenty-one units (including X-ray, laboratory, and pharmacy facilities) and parking space for 150 cars were required. The site had been a blighted residential district and there were fine trees which were retained wherever possible.

The site plan was so developed that all office units would have equally desirable locations close to one of the three parking areas. Units are grouped in five buildings, staggered to form a series of private courts. The pharmacy, X-ray, and laboratory facilities are centrally located; the pharmacy, next to the street, serves off-street customers. Each office unit has its separate entrance and all buildings are interconnected with covered walks. Though it was originally planned to develop one or two basic office layouts for the entire project, the individual requirements were so varied that each office unit has been specially designed.

A uniform structural system with steel-column bays 6′-4″ o.c. and open-web joists 3′-2″ o.c. permitted the elimination of interior columns, thus providing flexible interiors for the different requirements and facilitating future alterations. Windows, above eye level for privacy, take advantage of joist construction; skylights light some inner areas. Since the owners wanted low insurance rates, all studding is steel. Filler walls are glass and white stucco; end walls are red glazed brick.

Interior finishes are plaster for walls, acoustic plaster for ceilings, and vinyl-asbestos for flooring. Draperies are uniform throughout the offices. Basic cabinetwork, designed by the architect, is used in different combinations. Individual gas-fired furnaces heat each office. Cost of the project is $21.36 per square foot.

Photos: Dearborn-Massar

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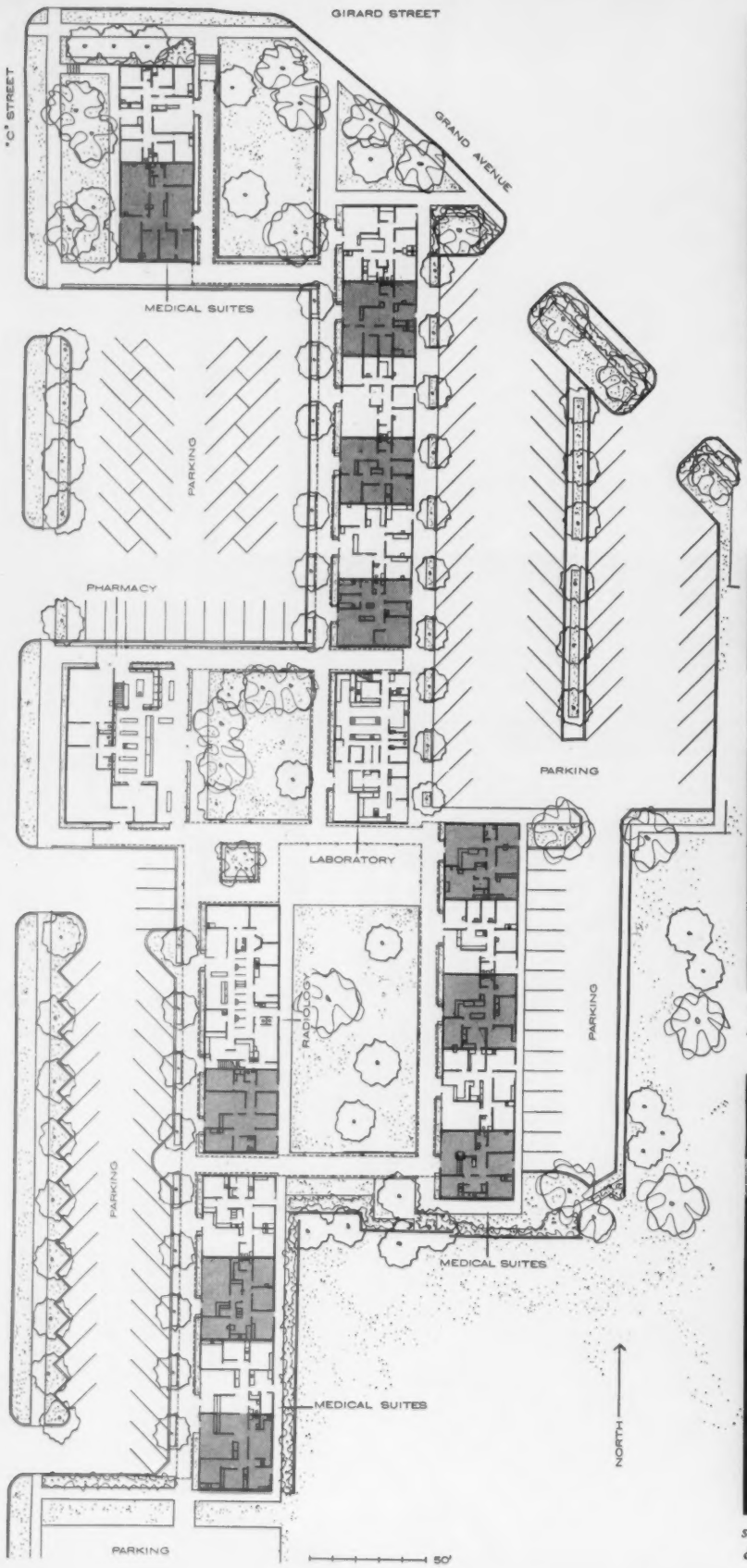
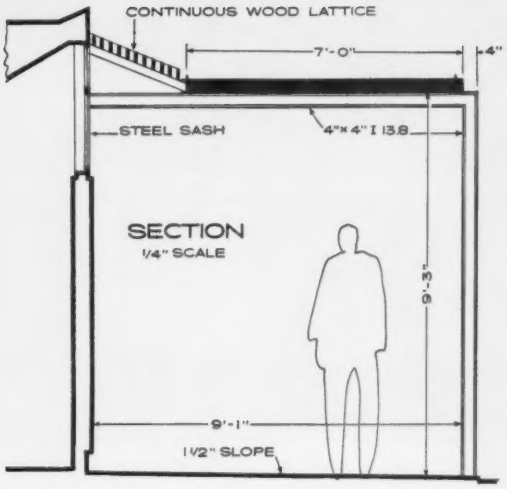
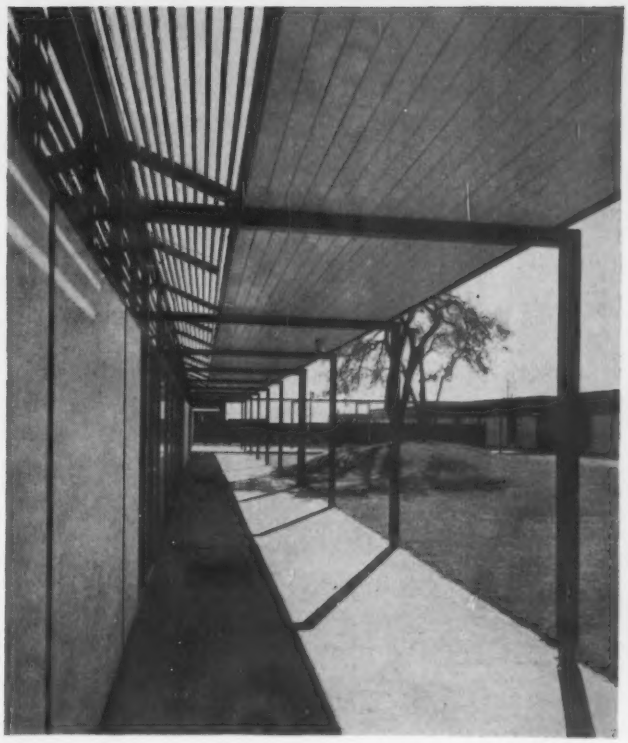


Covered walkways link the individual entrances. In general, the architect states,

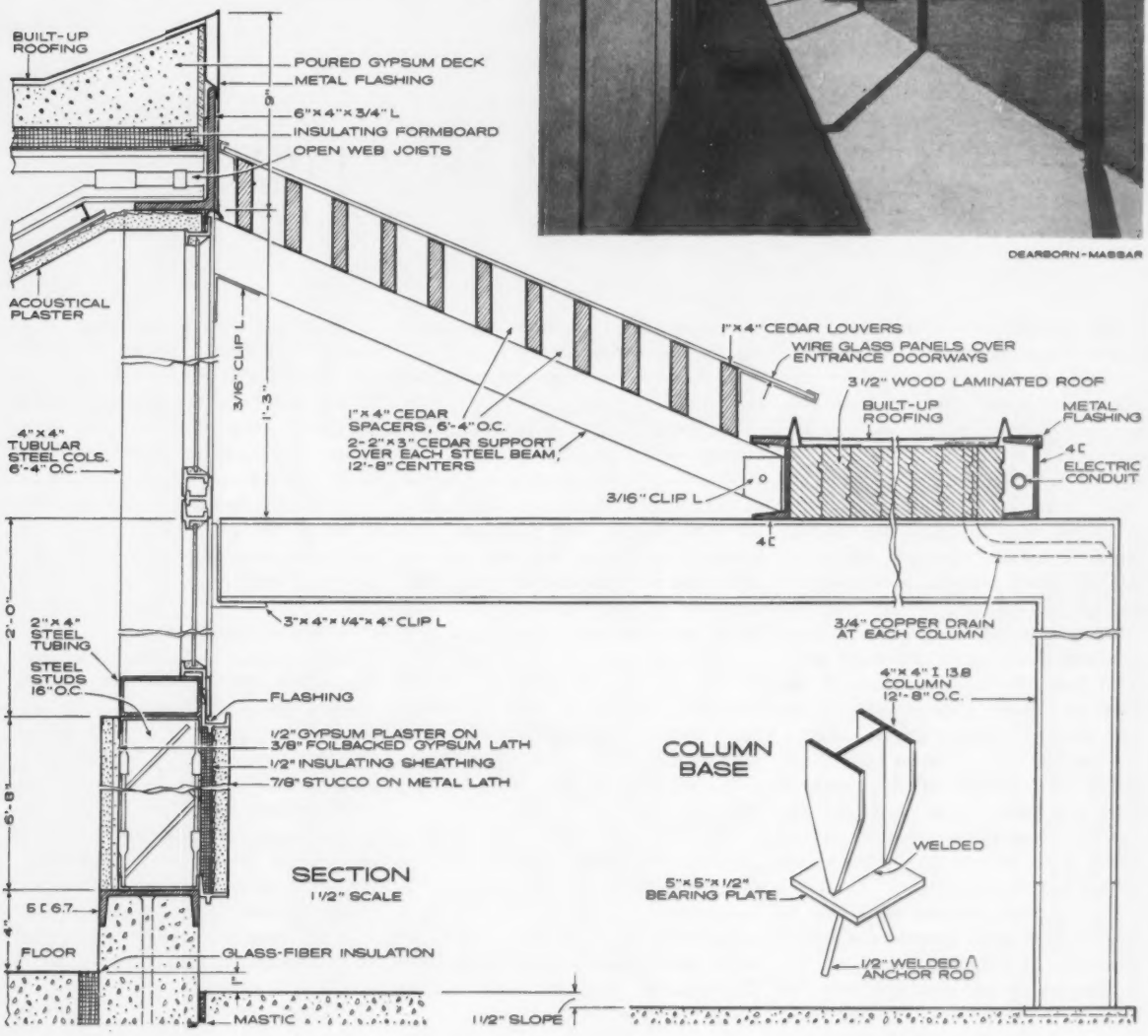
the units farthest from the parking areas have a better relationship to the land-

scaped courts. Planting was by Beardsley & Brauner, Landscape Architects.

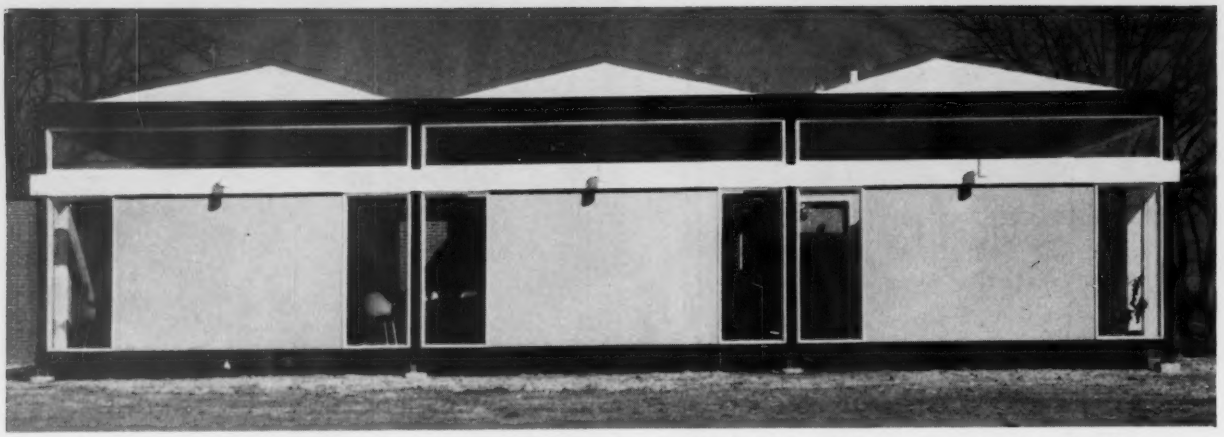




DEARBORN-MASSAR



BELLINGHAM MEDICAL CENTER: Bellingham, Washington GALEN W. BENTLEY, Architect; NORMAN H. OLSEN, Associate	SELECTED DETAIL COVERED WALKWAY



The clinic's waiting room/pharmacy unit was conceived as an "open, sculptural, finely-detailed building . . . contrasted to the blank, masonry building housing the working areas."

SMALL GROUP PRACTICE

UNION CITY CLINIC • UNION CITY, TENNESSEE • MANN & HARROVER, ARCHITECTS

The owners of this clinic are eight doctors with different specialties, who are associated in a small group practice. In addition to the conveniences of a medical center (a range of medical specialists, a pharmacy, and parking), the doctors benefit from the efficiency and economy of shared business personnel and medical, waiting, and lounge facilities.

The owners wanted a common waiting area and small rental pharmacy separated from the working areas of the clinic by a control point and entry space. Each doctor required a private consultation office with two adjacent examination rooms. They all wanted offices, waiting room, and pharmacy to have light and view; treatment rooms and other common facilities to be totally enclosed, for privacy and efficiency.

The site had attractive views west to landscaped hospital grounds and east to farmland. In designing and placing the building on the lot, great care was used to preserve the existing trees and relate them to the building. The waiting unit will be emphasized by setting it in a bed of white gravel.

The architects designed an open, sculptural, finely-detailed building for the waiting room and pharmacy, conceived to contrast with a blank masonry building for the working areas, to which it is connected by the entry and reception/control link.

The doctors' offices, at the rear of the masonry wing, take advantage of the view to the east. Each office and its two examination rooms is paired with a similar suite so that, with staggered office hours, the doctor on duty may use two offices and four examination rooms. The architects felt that "a scheme of consultation and exam rooms located in dead end clusters proved more efficient, more flexible with rotating office hours, and involved less corridor and circulation space than a central core scheme; it also allowed the doctors to retain a certain individual identity which they felt was important in a small town."

The totally enclosed common business and treatment facilities are grouped west of the central skylighted corridor. This main corridor leads to an emergency ambulance entrance next to facilities for minor surgery; major surgery is handled in a hospital which is located directly across the street.

The structure of the main wing is of masonry bearing walls supporting a concrete-slab roof with steel interior columns; exterior walls are common red brick and, for the window wall at the east, painted cement-asbestos panels.

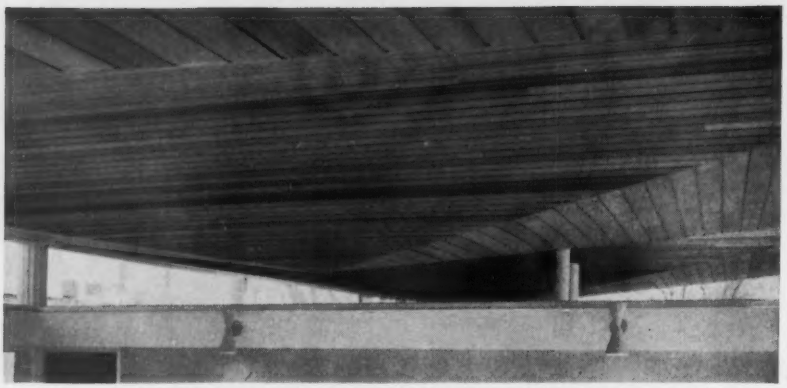
The waiting room was designed as an exposed steel-frame cage, its three roof bays framed with diamond-shaped steel trusses diagonally crossing each other and interlocking at the crossing point. Besides achieving the desired sculptural effect of a series of prisms projecting upward as the roof and downward as the ceiling of the space below, this was an extremely economical system, allowing the use of long-span steel decking above and a wooden ceiling below. John C. Brough was engineer.

The roof has a white capping material to give both reflective value and crispness against the sky. Exterior walls are cement-stucco panels on steel studding; the cement-stucco panels are pale gray. Flooring is integrally cast, white terrazzo on a concrete slab. Interior walls are painted plaster, except for wood paneling on one wall of each consultation office. Ceiling of the masonry unit is acoustical plaster sprayed directly on the slab.

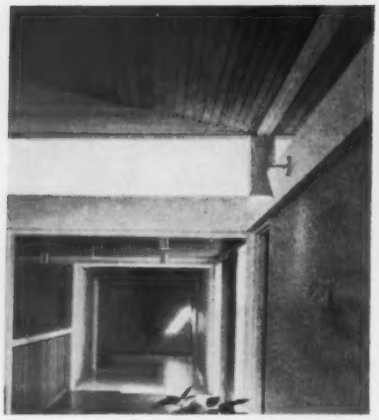
In the clinic's four-zone heating and air-conditioning system, air is distributed to concrete air-supply ducts below the slab and supplied to rooms through floor registers and baseboard diffusers. Like the "Roman" system, radiant as well as convected heat is supplied. Alex T. Bevil was mechanical engineer.

The 8600-sq-ft building was built at a cost of $14.35 per square foot.

Photos: W. W. Carrier, Jr., Allied Photographic Illustrators

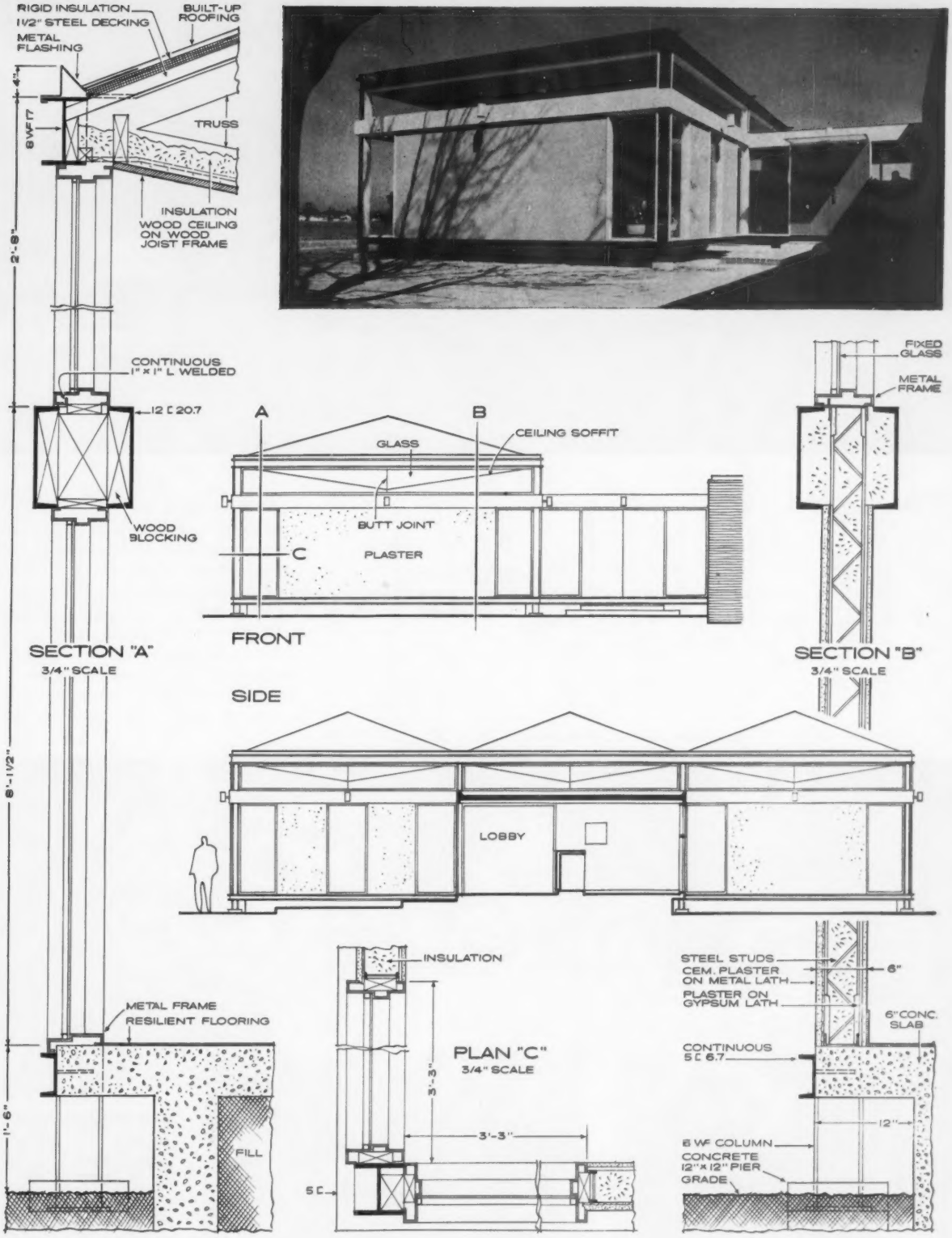


Roof bays of the waiting-room unit are framed with diamond-shaped trusses which project downward for a desired sculptural effect; the ceiling is surfaced with cedar.



The entry and reception area, a control point, links the waiting room (foreground) to clinic.

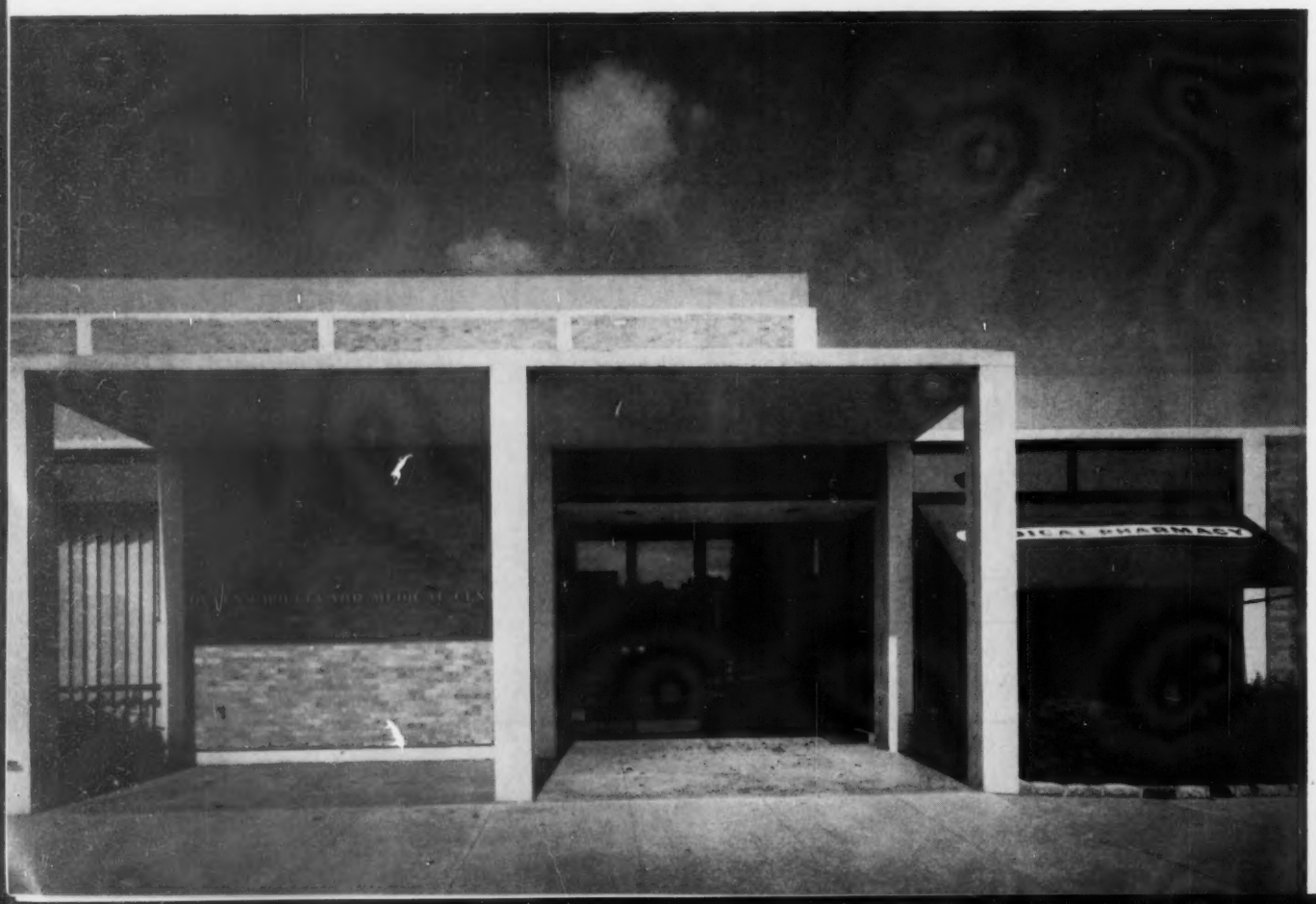
Skylighted central corridor separates business and treatment facilities from consultation offices.



UNION CITY CLINIC: Union City, Tennessee MANN & HARROVER, Architects	SELECTED DETAIL WINDOW WALL

Photos: Louis Reens

DOCTORS' PARTNERSHIP



QUEENS BOULEVARD MEDICAL GROUP BUILDING • ELMHURST, NEW YORK • ABRAHAM W. GELLER, ARCHITECT • LUCILLE H. MURAWSKI, JOB CAPTAIN

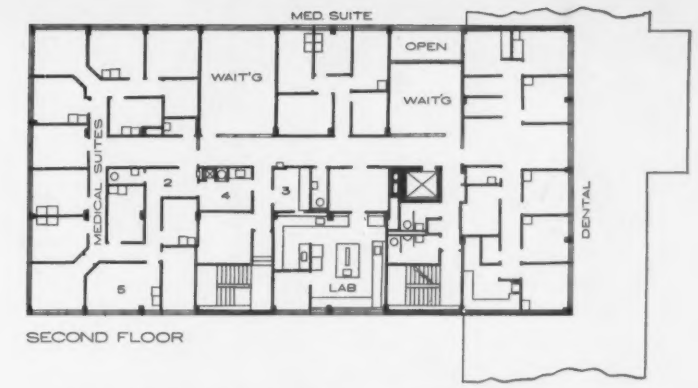
This medical center was built for a partnership of physicians whose practice will include 30,000 Health Insurance Plan members; with minor additions, the building will serve 40,000. Comprehensive, coordinated services and complete diagnostic and treatment facilities are housed in this total health center.

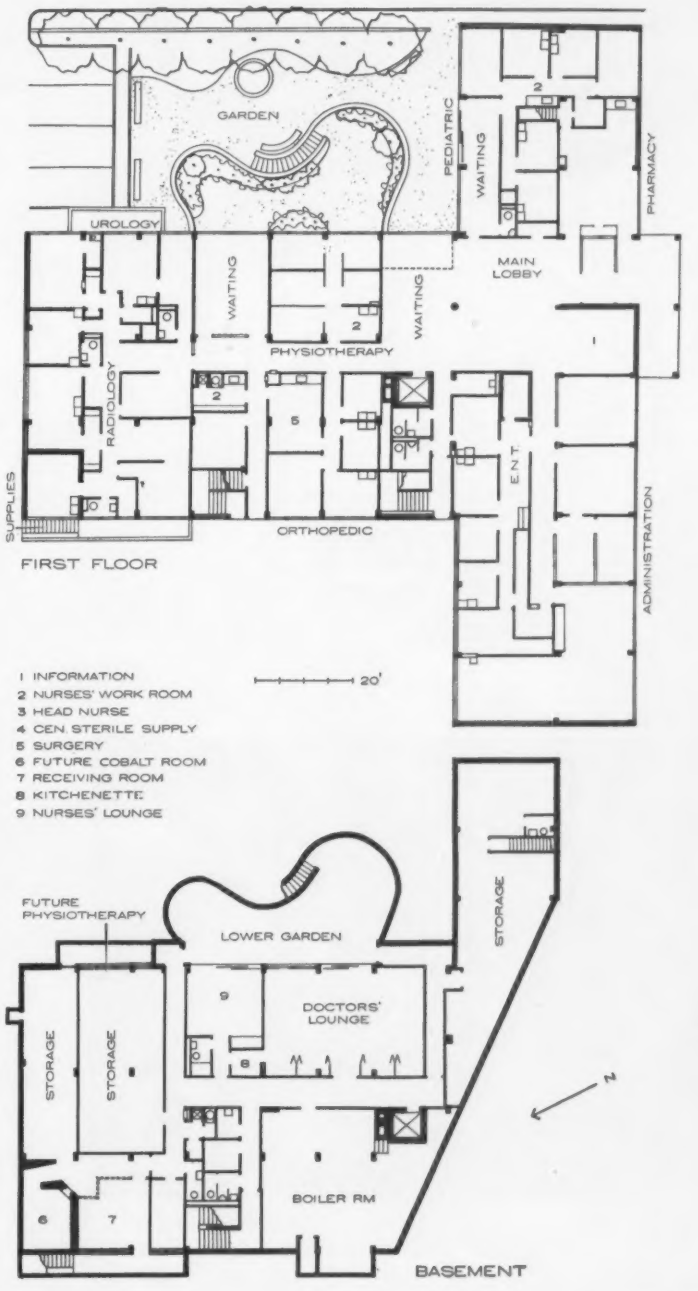
The doctors required several waiting areas for the six clinical departments (which include fully-equipped radiology, laboratory, and physiotherapy facilities, 14 consultation rooms, and 27 examination rooms), administration and central nurses' supply areas, and two rental areas —a large dental suite and a street-level pharmacy with its own entrance.

The 170′ x 170′ site is in a substandard small-business neighborhood. Planting screens the parking facilities on three sides of the building. Two landscaped courts—an upper garden with benches and a playground, reached from the ground floor, and a lower garden adjacent to the staff lounge—are on the east side of the clinic; the principal waiting and lounge areas face the gardens. Landscaping was designed by Bye & Herrmann, landscape architects.

The three-story building is of reinforced concrete with one-way slabs; columns and beams on both the exterior and interior were left exposed. The cavity walls are faced with gray ceramic-finished brick. A five-zone air-conditioning system serves the clinic and rental areas.

An extremely versatile foundation, column footing, and retaining wall solution was devised by Peter Bruder, structural-mechanical engineer, and Henry Gorlin, associated structural engineer. Filled-in earth, boulders, a stream, and subway tracks under a third of the lot made underground conditions difficult; in addition, the back of the lot was much higher than the adjacent properties. The building now rests on lead pads at column footings over the subway to avoid excessive vibrations; on wood, steel pipe, and steel H column piles, on standard spread footings, and on extended floating mat foundations. It is greatly to the credit of the structural engineers, the architect says, that all the varying superstructure loads have been balanced exactly over the varying soil conditions so that to this date there has not been a single structural settlement.

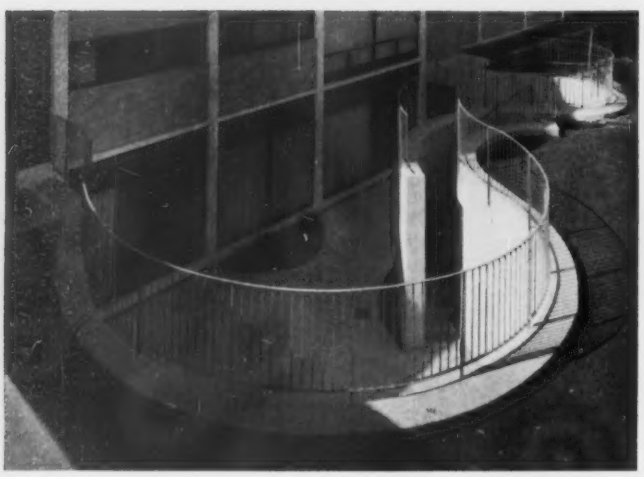


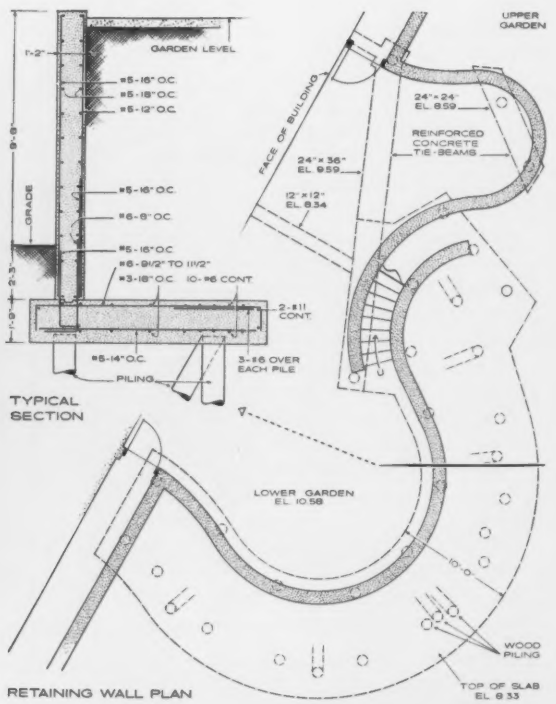


Main lobby, opening to garden, features a Jan Yoors mural.

QE MEDICAL CENTER

The entrance-wall lettering was specially designed and its spacing carefully determined by architect. White porcelain letters are set in bronze frames. A sinuous retaining wall encloses the secluded, lower garden which may be entered from doctors' and nurses' lounges.





From the portico outside, the center's main lobby and its mural are invitingly displayed through the entrance and vestibule.

A pleasant as well as an efficient environment for both patients and staff of the medical center—the aim of Architect Abraham Geller, Medical Director Dr. James Rudel, and Consultant Dr. Sigmund Friedman—has been realized throughout the interiors.

By providing five separate waiting areas on both floors for the various clinical departments, a free flow of patient traffic from the information center in the main lobby (*above*) is achieved.

Each of these principal waiting rooms faces the landscaped garden court. On the ground floor, the main lobby's waiting space and the pediatric waiting room (*right*) open directly, through floor-to-ceiling sliding glass doors, to the garden and its playground. Patients may also exit through the garden, relieving the flow of traffic on the ground floor of the clinic. The waiting alcoves, overlooking the gardens from the second floor, receive a maximum amount of natural daylight through floor-to-ceiling windows.

A similar amenity is provided for the doctors and nurses in their lounges at basement level. The large doctors' lounge, which doubles as a conference room, has floor-to-ceiling windows and sliding glass doors which open into an enclosed lower garden patio.

One of the most unusual and commendable aspects of the medical center is its generous provision for the display of art — painting and sculpture in the waiting rooms and sculpture in the garden. In developing this aspect of the program, the architect had a sympathetic client in Dr. Rudel, an informed art collector and supporter. Designed as galleries, the waiting rooms (*far right*) each have a white burlap-covered wall which is fluorescent cove-lighted for changing exhibitions of paintings.

On permanent loan to the center, a two-story-high mural by Jan Yoors (*above* and *preceding page*) was specially-commissioned for the main entrance lobby by Dr. Rudel. An abstraction with flamelike forms in brilliant reds, blues, and purples against a black background, the mural is inscribed with the Oath of Hippocrates—"I shall keep my art skilled and pure."

The interior furnishings were designed or selected by Marion Geller of Integra. In the waiting rooms where art is on display, the fabrics are in neutral tones of gray, black, white, or brown. In other areas, fabrics in brilliant red, blue, and yellow provide color accents; all fabrics were chosen for extreme durability.

The information center in the lobby is precisely-detailed and carefully-lighted. Switchboard equipment is behind the screen.

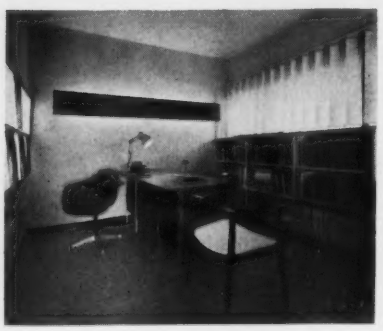
Sliding glass doors in the pediatrics waiting room open to an outdoor play area in the garden.

Waiting rooms receive maximum daylight; were conceived as galleries for changing art shows; white exhibition walls are fluorescent cove-lighted, fabrics are neutral.

Nurses' station for the pediatric suite is central to the four examination rooms.

The medical director's office advantageously displays works from his personal art collection. Walnut desk, storage unit, and light shelf were specially-designed.

X-ray diagnostic room was designed for the unit moving on ceiling-hung runners.



X-ray consultation office has generous shelf space, built-in walnut light screen.

The doctors' lounge and conference room has sliding glass doors to the lower garden patio. It is adjacent to a fully-equipped kitchenette and nurses' lounge.

DATA: descriptions and sources of the major materials and furnishings shown.

CABINETWORK, SCREENS, PARTITIONS

Information Center: desk/walnut facing/plastic-laminate top; telephone switchboard screen/walnut frame/white burlap/Fabrikona/Fabrikona, Inc., East Taunton, Mass.; architect-designed/custom-made/Multiflex, 220 E. 23 St., New York, N.Y. **Nurses' Station Cabinet:** light gray wood/yellow plastic-laminate top/architect-designed/custom-made. **X-ray Consultation Office Bookcases, Staff Lounge Storage Units:** wood/sprayed-white lacquer finish/architect-designed/custom-made.

DOORS, WINDOWS

Doors: solid-core mahogany veneer/Roddis Plywood Corp., Marshfield, Wis. **Window Blinds:** light blue vinyl-coated fabric/Thru-Vu Vertical Blind Corp., 805 Mamaroneck Ave., Mamaroneck, N.Y. **Director's Office Draperies:** white linen boucle/L. Anton Maix, Inc., 162 E. 59 St., New York, N.Y.

EQUIPMENT

X-ray Diagnostic Room: X-ray unit imported from the Netherlands; light screen/Bar-Ray Products, Inc., 209 25 St., Brooklyn, N.Y.

FURNITURE, FABRICS

Entrance Lobby Lounge: chairs/brown vinyl upholstery/Jens Risom Design, Inc., 49 E. 53 St., New York, N.Y.; coffee table/white plastic-laminate top/white finish aluminum base/Herman Miller Furniture Co., Zeeland, Mich. **X-ray Waiting Room:** arm chairs/orange upholstery/George Tanier, Inc., 521 Madison Ave., New York, N.Y.; coffee table/Herman Miller Furniture Co.; bench with custom-made white vinyl cushion/Design International Corp., 17 E. 53 St., New York, N.Y.; wall-hung seat with integral table/walnut show wood with yellow vinyl cushion, black-and-white fabric back/designed by Integra/custom-made/Colby Associates, Inc., 250 E. 51 St., New York, N.Y. **Pediatrics Waiting Room:** white vinyl-coated chairs/blue seat pads/Knoll Associates, Inc., 575 Madison Ave., New York, N.Y.; table/white plastic-laminate top/metal frame/Herman Miller Furniture Co.; wall-hung seat with integral table/walnut show wood/persimmon vinyl seat, black-and-white fabric back/designed by Integra/custom-made/Colby Associates, Inc. **Staff Lounge:** arm chairs/orange upholstery/George Tanier, Inc.; walnut show wood sofa with gold upholstery/walnut end tables/Jens Risom Design, Inc.; walnut conference chairs with black-and-white linen upholstery/John Stuart, Inc., 470 Fourth Ave., New York, N.Y.; conference table/designed by Integra/custom-made/Multiflex. **Director's Office:** walnut desk/designed by Integra/custom-made; walnut arm chairs/swivel with red, others with gold upholstery/Jens Risom Design, Inc. **X-ray Consultation Office:** walnut desk/custom-made/Multiflex; arm chairs upholstered in white, persimmon vinyl/JG Furniture Co., 160 E. 56 St., New York, N.Y.; viewing chair/black leather/Herman Miller Furniture Co.

LIGHTING

Ceiling-Recessed: incandescent fixtures/Kurt Versen Co., 4 Slocum Ave., Englewood, N.J. **Fluorescents:** cove-lighted exhibition walls in waiting rooms; surface-mounted or recessed in examination rooms/Lightolier, Inc., 346 Claremont Ave., Jersey City, N.J. **Pendant Fixtures:** supplementary in X-ray waiting room, director's office, staff lounge/Georg Jensen, Inc., 667 Fifth Ave., New York. **Wall Fixtures:** walnut shields in pediatric waiting room, X-ray consultation office/walnut-and-glass shelf in director's office/architect-designed/custom-made/Multiflex. **Lounge:** special lighting for mural/Kliegl Brothers Universal Electric Stage Lighting Co., Inc., 321 W. 50 St., New York, N.Y.

WALLS, CEILING, FLOORING

Walls, Ceiling: painted plaster; waiting room exhibition walls covered with burlap painted white/Fabrikona, Inc. **Flooring:** vinyl asbestos in lobbies, waiting rooms, corridors/asphalt tile in other areas/white with black, multicolor in pediatric waiting room/Matico Confetti/Mastic Tile Corp. of America, P.O. Box 128, Vails Gate, N.Y.; wool carpet in director's office/James Lees & Sons Co., Bridgeport, Pa.

ACCESSORIES, ART

Main Entrance Lobby Mural, Staff Lounge Tapestry: by Jan Yoors, 329 E. 47 St., New York, N.Y. **Pediatric Waiting Room:** animal drawings by Jan Yoors; picture frame/Multiflex. **X-ray Waiting Room:** paintings, sculpture on loan/Grace Borgenicht Gallery, 1018 Madison Ave., New York, N.Y.

Packaged Sewage Disposal Plants

BY G. H. TELETZKE

Many communities, institutions, and industries are unable to connect to large city sewage-disposal systems. For them, package sewage-treatment plants are often the best solutions. Discussed here —by the Director of Sanitary Engineering Research for The Eimco Corporation —are conventional treatment methods, principles of aerobic digestion, and typical examples of aerobic digesters.

In the next 15 years, an estimated $24 billions will be spent by this nation for sewage treatment facilities and sewage pipe lines. Most of this amount will be spent, of course, by municipalities. There are, however, sufficient requirements for sewage-treatment facilities outside the municipal circle, and within the interest of the architectural profession, to warrant this brief review of the package sewage-treatment plant.

The water-pollution abatement program in the United States has become more important each year, as population increases and moves toward urban areas. Increasing demands for clean waters for domestic, industrial, recreational, and even agricultural uses have created a need for more stringent pollution control by State and Federal agencies. With many of our streams already polluted, and with 43 percent of cities and 57 percent of industries discharging untreated sewage into nearby waters, tighter control over waste waters can be definitely foreseen.

According to the Division of Water Supply and Pollution Control, U. S. Public Health Service, the daily needs for pure water will be up to 600 billion gallons per day in 1980. This same quantity will have to be disposed of safely. A federal survey completed last year revealed a need for some 6,000 municipal sewage-treatment plants to take care of the handling of domestic and industrial sewage.

While these figures serve to point up the over-all picture from the municipal point of view, there is also an impressive amount of work that will have to be done to take care of the communities, institutions, and industries that are unable to connect to large city sewage-disposal systems.

Another factor influencing the number of private sewage-treatment facilities that will be needed is the frequent desire of fringe communities and industrial and commercial establishments to be independent from any political unit. Every such project that can not or will not tie into a municipal waste-treatment facility will require some kind of treatment plant.

One of the most successful types of complete sewage-treatment package plants developed to date is the aerobic-digestion system; it is this type of facility that will be considered here. However, to help place the aerobic-digestion method in perspective with the other methods of sewage treatment, it might be well to review briefly the over-all sewage-treatment picture.

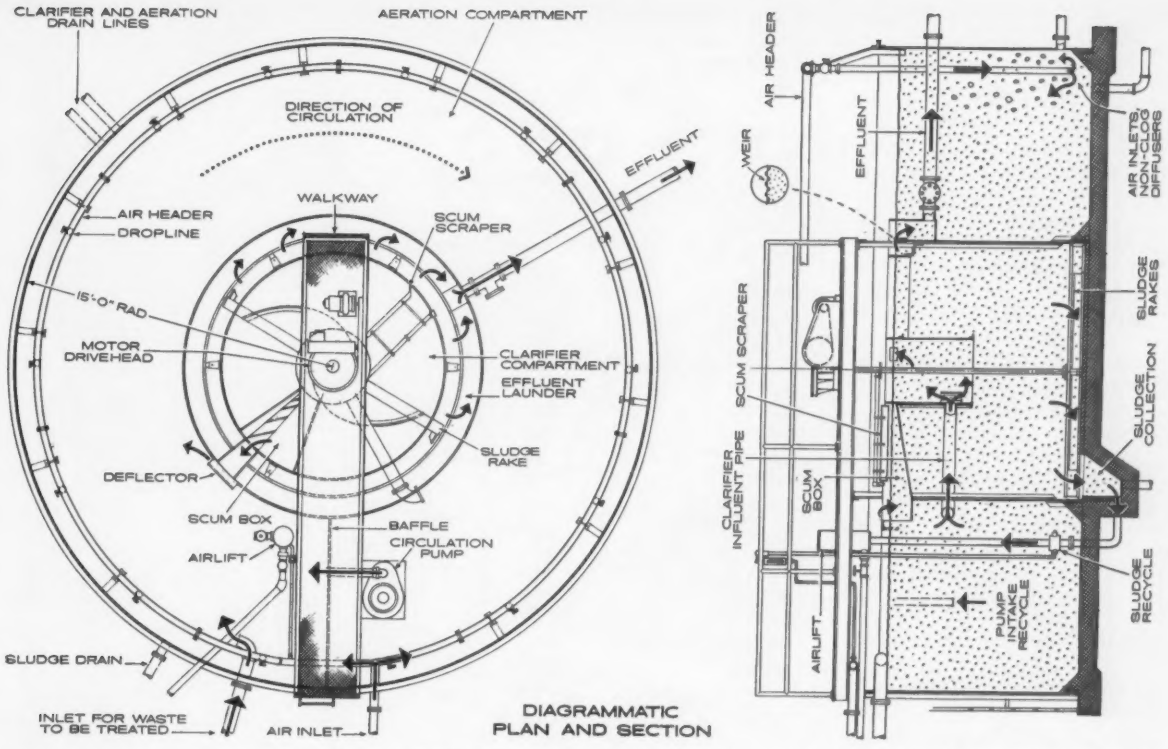
Conventional Treatment Methods

In general, sewage treatment may be divided into physical and biological processes. The physical or mechanical processes normally include screening the raw sewage to remove coarse solids, and quiescent settling in settling basins or clarifiers to remove finely-divided settleable solids. This mechanical removal of screenable and settleable solids is called primary treatment; it is employed by many municipalities to remove unsightly solids from their waste discharges.

However, in many cases primary treatment is insufficient to eliminate all nuisance conditions in a receiving body of water. Even after the major part of the suspended solids has been removed, there remain dissolved and colloidal materials that will serve as excellent food for bacteria. Bacteria, like human beings, need oxygen to sustain themselves; when an abundant food supply is provided in a sewage discharge, bacteria multiply and soon deplete the quantity of dissolved oxygen in the receiving water. This demand for oxygen created by a waste discharge is termed Biochemical Oxygen Demand, commonly referred to as BOD. BOD is the most frequently used measure of the polluting strength of a waste discharge.

Depletion of dissolved oxygen in a receiving body of water is obviously not consistent with healthy, clean lakes and streams. If the oxygen demand of a sewage discharge is great enough, fish kills will result, grey filamentous fungus growths will replace green plants, and decay will give rise to obnoxious odors.

Primary treatment of raw domestic sewage normally removes about 35 percent of the oxygen demand. To reduce the oxygen demand of sewage an additional amount before discharge, secondary biological-treatment processes are employed. In secondary treatment, the natural biological-purification processes occurring in any flowing body of water are confined in man-made structures.



General arrangement and flow indications for 40,000 GPD aerobic digestion plant. These can be of prefab-steel or concrete construction.

The two general types of secondary treatment are the "trickling-filter" process and the "activated-sludge" process.

In the trickling-filter process, primary effluent is sprinkled over rock beds by rotary distributors—similar in principle to rotary-reaction lawn sprinklers. The rock beds or trickling filters are normally about 6′ deep, made up of rocks 2″ to 4″ in diameter, and are supported on an underdrain system that permits free drainage and ready access to life-supporting oxygen in air. Excessive slime growths that accumulate on the filter stone are continuously washed off the rock surfaces, and removed from the purified liquid effluent, by a final clarifier. Treatment by trickling filters, following primary settling, normally removes about 85 percent of the BOD of the raw sewage.

In the activated-sludge process, primary effluent is aerated for about six hours in the presence of bacteria that adsorb and consume the organic polluting material in the waste. These bacteria are called "activated sludge." From the aeration chamber, the mixed liquor that contains the activated sludge is conveyed to a settling basin where the sludge separates from the liquid. The liquid then overflows as a sparkling-clear effluent—often as pure as the stream receiving it. The effluent from the activated-sludge process normally retains only about five percent of the oxygen demand of the raw sewage.

Most of the sludge settled in the final clarifier of the activated-sludge process is returned to the aeration chamber, to be reused for purifying additional sewage. However, because of the continuous reproduction of bacteria, a small amount of excess sludge is produced which must continually or periodically be wasted from the process. This waste sludge is usually returned to the primary clarifier to be handled together with the primary sludge. Sludge from the secondary clarifier of the trickling-filter process is handled in a similar way.

The solids removed as sludge in the purification of sewage may be dewatered directly on continuous rotary-vacuum filters, and disposed of by sanitary fill or by incineration; as an alternative, the sludge may be submitted to additional biological treatment in sludge digesters. In the sludge-digestion process, bacteria living in the absence of free oxygen break down the decomposable organic-sewage solids to combustible gases. The remaining digested sludge is readily dried on vacuum filters or sand drying beds; it has an unobtrusive odor and is often used as a soil conditioner. The digester gases produced are often utilized to heat the digester and buildings, or to operate motors for pumps.

A final step in sewage treatment usually includes chlorination of the liquid effluent. Chlorination will destroy any disease-producing bacteria remaining in the treated sewage, and is especially important where effluents are discharged into areas adjacent to bathing or other recreational areas.

Small Installations: Septic Tanks

From the brief foregoing review, it can be seen that sewage treatment, as practiced by large municipalities, is a complex and costly operation requiring continual attention for satisfactory results. Obviously, complicated operations

Typical Installation Water Demands

Source	*Production Unit*	*GPD*
AIRPORT	PASSENGER	3.0— 5.0
BAR OR TAVERN	PERSON	50.0
CHURCH	PERSON	25.0— 70.0
DRIVE-IN THEATER	CAR SPACE	2.0— 7.5
FAIRGROUND	PERSON	1.0
HOSPITAL	BED	135.0—350.0
HOTEL	ROOM	300.0—525.0
LAUNDRY	POUND	4.3— 5.7
MOTEL	ROOM	120.0—125.0
	GUEST	40.0— 75.0
OFFICE BUILDING	PERSON	20.0— 45.0
PICNIC AREA	PERSON	5.0— 10.0
RESIDENCE	PERSON	50.0
RESORT	PERSON	25.0— 70.0
RESTAURANT	MEAL	2.5— 10.0
SCHOOL (ELEMENTARY)	PERSON	10.0— 15.0
(HIGH)	PERSON	15.0— 20.0
SERVICE STATION	SET OF PUMPS	500.0
	VEHICLE SERVED	10.0
SWIMMING OR BATHING PLACE	PERSON	10.0
THEATER OR AUDITORIUM	PERSON	2.0— 5.0
	SEAT	1.0— 5.0
TRAILER COURT	TRAILER SPACE	100.0—150.0
	PERSON	35.0— 50.0
TURNPIKE SERVICE AREA	PERSON	60.0
WORK OR CONSTRUCTION CAMP	PERSON	50.0

are not suitable for the small installation that cannot afford continuous skilled-operator attention.

The earliest method of sewage treatment employed for small installations was use of the septic tank, followed by soil absorption or intermittent sand filtration of the liquid effluent. In this method of disposal, the solids in the sewage are removed by settling in the septic tank. Some anaerobic decomposition of solids occurs in the tank, but periodically the solids must be pumped from the tank and disposed of separately.

The liquid overflow, free of 60 to 70 percent of its initial solids, is black and odorous and cannot be discharged on the ground surface without additional treatment. If possible, the liquid is dispersed over a large area by distributing it to permeable soil through a system of open tiles laid in covered, shallow trenches. In areas where soil condition or available land does not permit this method of disposal, intermittent sand filters have been used. The intermittent sand filter is merely a sand bed, at least 24″ deep, through which the sewage is filtered before being discharged to a drainage course. The sand filter must be provided with a suitable sewage-distribution system and an underdrain system. As the name implies, sewage is applied intermittently first to one filter and then to another. Periodically, the solids accumulated on the sand surface must be removed and the surface raked to prevent clogging of the filter.

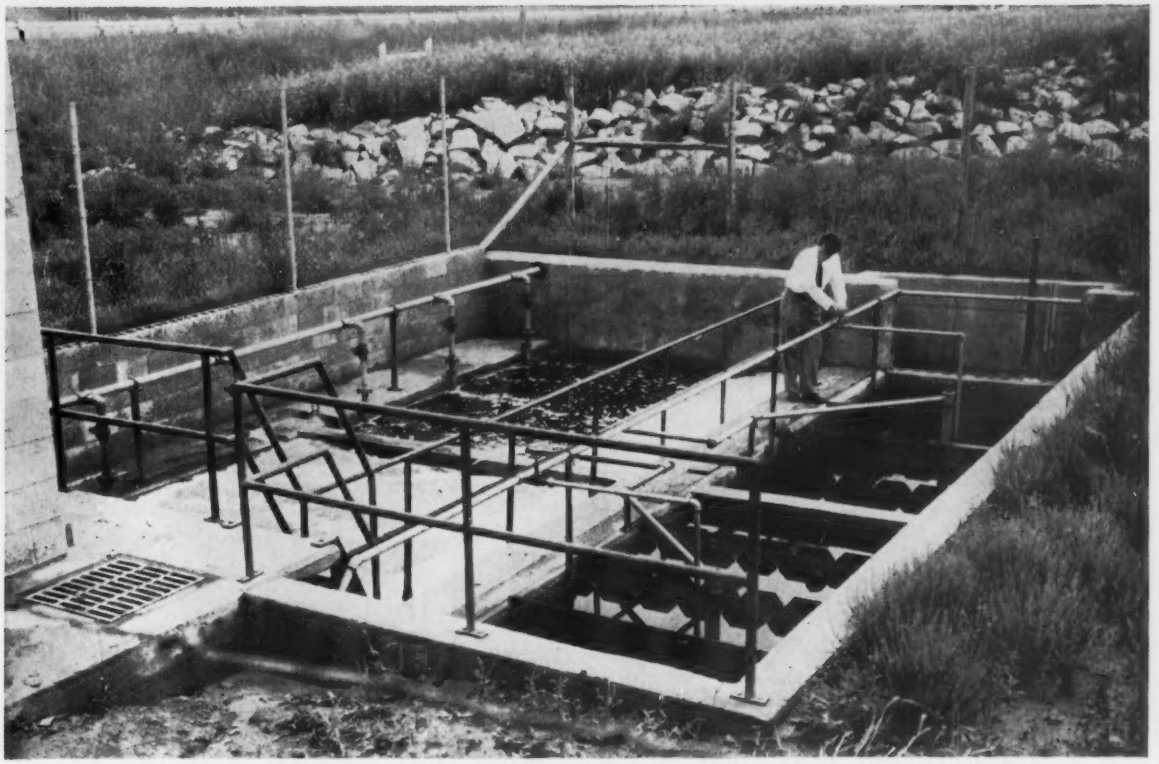
Septic tanks followed by soil-absorption fields or intermittent sand filters have not been completely satisfactory. Both systems have been known to clog, with inadequate maintenance, and both require the availability of considerable land area. Sand filters are often esthetically unappealing and need fencing where there is a possibility of children getting into them.

Principles of Aerobic Digestion

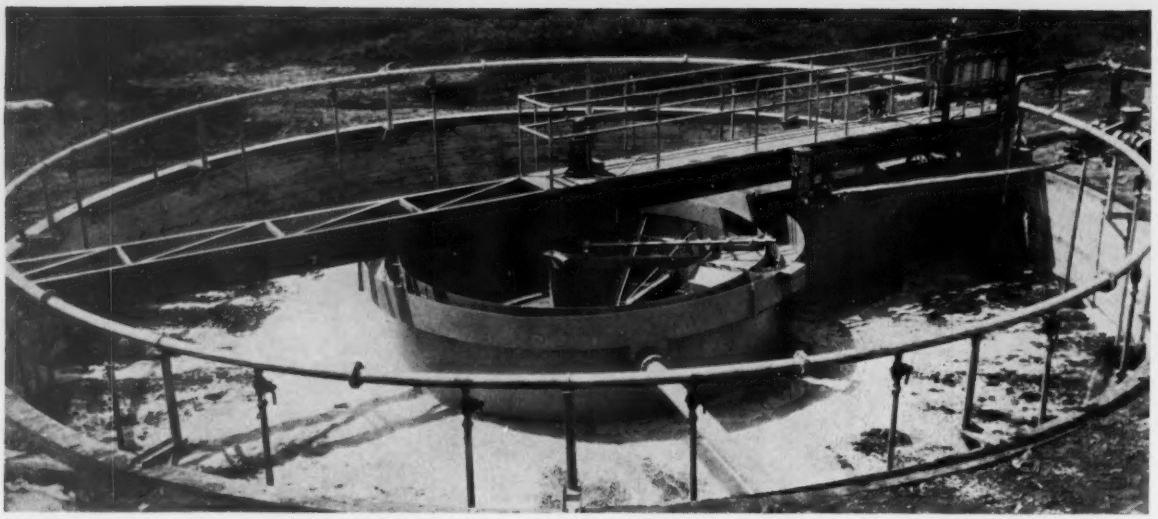
The more recent solution to the increasing demand for small treatment facilities is aerobic digestion, a modification of the activated-sludge process. In this process, primary treatment has been eliminated, except for the grinding of large solids into small pieces by a grinding-and-shredding device called a comminutor. The raw waste containing all of the solids is discharged directly to an aeration chamber, to be detained for about 24 hours. Here, the waste is vigorously aerated in the presence of activated-sludge organisms. Aeration is applied by compressed air that is discharged through non-clog diffusers in the aeration compartment. From the aeration compartment, the mixed liquid flows to a settling compartment for a four-hour detention period. The settled sludge is then returned to the aeration compartment by an air-lift pump and mixed with incoming raw sewage. The repeated recirculation of solids, and the extensive aeration period, cause the decomposable solids to be broken down into biologically-stable organic matter. The residual inert solids may be discharged in the plant effluent without seriously affecting the quality of the effluent. BOD reductions of 85 to 90 percent are commonly experienced despite lack of any separate means of sludge disposal. Removal of suspended solids often exceeds 70 percent.

The elimination of primary settling tanks, digesters, and sludge-handling equipment has simplified the aerobic-digestion process to the point where the little operation and maintenance required can be normally accomplished by relatively unskilled maintenance personnel.

Aerobic-digestion plants can be constructed either of prefabricated steel structures or of concrete. The flow capacity ranges from 1000 gallons per day (GPD) to 15,000 GPD for pre-



1 *Rectangular-type aerobic digester* (above)—*serving 300 people—is suitable for small centers not accessible to municipal sewer lines.*
2 *This 30' diameter steel tank* (below)—*applicable to remote installations—handles flow of 40,000 GPD, has 24-hour aeration period.*



3 *Influent for this plant contains wastes attendant to processing 25,000 chickens per day; 100,000 GPD capacity; average flow 160 GPM.*

fabricated units, and up to 500,000 GPD for concrete structures. Because of its fairly high air use, this process loses some of its advantages when larger flows are encountered (compared with the conventional activated-sludge or trickling-filter processes with separate sludge disposal).

To estimate the size of an aerobic-digestion installation for any given project, the accompanying table can be consulted. It is seen, for example, that a motel requires 120 GPD of water for each room, and 40 to 75 GPD for each guest. (The wide variation can be accounted for by geographic location and by variation in water use during different seasons of the year.) Thus, a 20-room motel, expecting a maximum capacity of two persons per room during the summer season, for example, would require an aerobic-digestion system capable of handling about 5500 GPD.

Typical Applications

Several specific cases can be cited to show the applicability and versatility of the aerobic-digestion plant.

Package plants have found widespread use in small housing developments. Near West Lorraine, Ohio, a rectangular-type aerobic-digestion plant provides complete sewage treatment for a development of approximately 300 persons 1. This plant has been in operation about three years, providing excellent treatment with little operating or maintenance attention.

Another typical application for this type of plant is for schools and institutions. One of the larger plants, handling 60,000 GPD, serves Wheaton College in Massachusetts. Despite extremely intermittent flows due to student vacations, etc., school treatment plants have shown exceptionally low content of suspended solids in the effluents.

Aerobic-digestion package plants are readily applicable to remote installations. At the Civil Aeronautics Administration Air Route Traffic Control Center in Hilliard, Florida, a 30′-diameter steel tank has been provided to serve personnel 2. The unit handles a flow of 40,000 GPD.

Industry, too, has found wide use for aerobic-digestion treatment plants. In Hiddenite, North Carolina, Farmers Co-operative Exchange operates a chicken-processing plant, handling approximately 25,000 chickens a day 3. Wastes include solids, feathers, fats, and blood. The plant operates 12 hours a day, four days a week, and there is an average flow of 160 gallons of waste per minute. In order to make this effluent acceptable to the Yadkin River Basin, the consulting engineers recommended an aerobic-digestion plant which provides complete treatment in a single 50′-diameter tank rated at 100,000 GPD capacity. Cost of the entire plant, including concrete work and labor, was less than $40,000. Operating costs, consisting mainly of compressing air, are less than $3.00 per day.

The package treatment plant is adaptable to many such installations because it is:

1 Inexpensive to buy, build, and maintain.
2 Simple to operate.
3 Flexible in disposal of effluent, providing good clarification, minimum amount of sludge, good stabilization, and odorlessness.
4 Operable on a continuous basis without constant presence of an operator.
5 Compact for installations at numerous sites.
6 Capable of being housed.
7 Repaired with a minimum of equipment.
8 Easy to install, using the services of a general contractor.
9 Dependably operated without nuisance.

Conclusion

With this brief review, it is possible to see many possible applications of this system. Because of the tightening of local and interstate legislation with regard to water-pollution abatement, more attention will have to be paid to waste disposal in the future. Much can be done to assist in this national problem as engineers and architects become more aware of the need for including treatment facilities in their projects—for subdivisions, institutions, schools, motels and hotels, airports, resorts, trailer parks, shopping centers, hospitals, industrial plants, and restaurants—in fact, for all the activities growing up around urban centers whose sewage-treatment facilities and carry-off streams are already reaching dangerous levels of overtaxation.

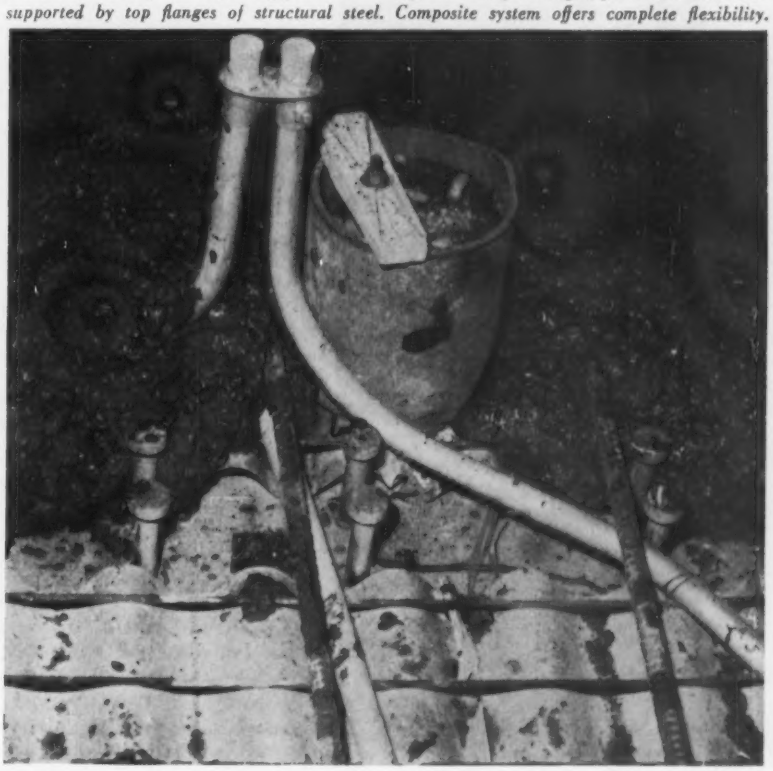
Composite Construction

BY HAROLD S. WOODWARD AND IRA M. HOOPER

Composite construction for buildings gains steadily in popularity. A review of its principles and an example outlining the design of a typical composite beam are presented here by a Partner and Associate Partner, respectively, of Seelye, Stevenson, Value & Knecht, Consulting Engineers, New York, N.Y.

In welding stud to top flange of steel beam, ceramic ferrules containing annular openings—which control the vapor products of welding—are used. These are subsequently knocked away.

Concrete slab in process of being poured. Forming here is high-strength, permanent steel base supported by top flanges of structural steel. Composite system offers complete flexibility.

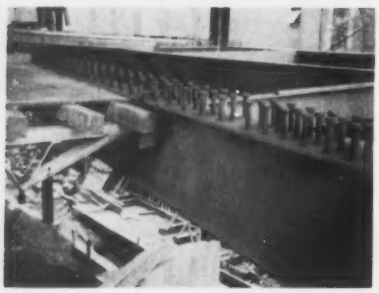


While composite construction is not new, its principal use up to the present time has been in bridge work. Consequently, its potentialities for the broader building industry are not universally known.

The system was developed in the late 1920's, but its first real impetus in this country came from the adoption of the American Association of State Highway Officials *Specifications* in 1944. As a result, it is now used throughout the country in bridge work, but its progress in the field of buildings has been much slower. Composite construction was first used in the writers' office in the early 1950's, when 36 WF beams were used to span a 92′ ballroom in the Statler-Hilton Hotel in Dallas. Since then the system has been used on many jobs of different classifications, the latest being a large courthouse and federal office building in Brooklyn, New York.

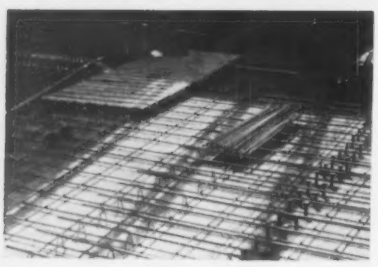
Typical steel floor framing system with welded studs placed on both beams and girders.

In preparation of forming for concrete slab, wood supports are anchored to web of steel.



Further step in the erection of falsework for concrete slab in composite construction.

Steel joists support forming. Fireproofing can be sprayed-on or in plaster-ceiling form.



Completed slab reinforcing. Shear-connector spacings vary with the horizontal shear.

Basically, composite construction makes a concrete slab work in conjunction with the steel supporting beam instead of merely resting on top of it. T-beam action is well understood in concrete construction: the concrete slab acts as an integral part of the beam and thereby increases the compression area of concrete available for beam action. Exactly the same action takes place with the composite type. The only added feature is the "shear connector" on the top flange of the steel beam, to transfer horizontal shear between the two elements. Composite construction, then, consists of three basic elements—the reinforced-concrete slab, the steel beam, and the shear connector (page 172).

Advantages obtained with the use of composite construction are:

1 Savings in steel tonnage and over-all cost.

2 Decreased over-all depth of construction, with consequent reduction in story height possible.

3 Longer spans with rolled sections.

On the debit side:

1 Construction is not fireproof. Where this is a necessity, fireproofing material may be sprayed on, or a lightweight-aggregate/plaster ceiling used below; such fireproofed construction is competitive in price with concrete construction.

2 Studs projecting from the top flange are a tripping hazard in the field. This objection can be avoided by welding the studs after steel erection.

Shear Connectors

There are various types of shear connections that can be used, but the two principal ones are the *spiral* shear connector and the *welded stud*. The spiral originated first, and consists of a rod that is wound to diameters to fit design conditions. This is stretched out along the top flange of the beam and welded to it at intervals fixed by the design.

The welded stud, a recent development, has supplanted the spiral to a great extent. Studs vary in diameter from ½″ to 1″; the sizes generally used are ¾″ or ⅞″. They are welded in lines along the beam, at spacings that vary with the horizontal shear, being closer together as the support is approached. The stud itself is a short length of round steel bar with an upset head at the top —the upset head serving to hold the slab down and prevent any separation from the steel beam. The New York City Bureau of Standards and Appeals has approved the use of ¾″ studs, with an allowable shear of 4200 lb/stud, for

composite construction.

The main advantages of studs are the ease and speed with which they can be welded to the steel beams. Welding is accomplished, either in the shop or the field, by means of a portable lightweight stud-welding gun that is operated by a semiskilled worker. An electric arc, between the stud and beam flange, melts the end of the stud and the corresponding spot on the beam flange. The welding gun automatically inserts the stud into a molten pool of metal after the arc has been in effect a preset period of time. The entire operation for a stud is one second or less.

Unshored and Shored Procedure

There are two methods that may be used with the composite design, depending to some extent on field conditions. With the *unshored* method, the beams are free to deflect under construction loads; the steel beam must be capable of supporting its own weight, the weight of the forms, and the weight of the wet concrete slab. This load is of course applied before the shear connectors are able to act; consequently, the composite construction can take only the loads applied after the concrete has set. (These loads might be surface finishes, partitions, ceiling construction, other permanent loads, and the design live load.) In almost all bridge structures this is the design method used; shoring is usually impracticable due to conditions under the bridge. Furthermore, the applied loads are a larger percentage of the total load in bridge work than is ordinarily the case in building construction.

The *shored* method uses temporary shoring, the shores remaining in place for a minimum of two weeks. With the spans encountered in building work it is usually sufficient to shore at the center of the span only, although shoring at the quarter points may be justified with long spans. The shoring method is more economical of materials, and results in less total deflection than the unshored method. It has been the practice of this office to use the unshored procedure in building design. If the shores bear on mudsills, they should be carefully watched when concrete is being poured to check on any settlement. Corrective wedging or jacking may be necessary.

At the present time there are no specific code recommendations regarding shored or unshored procedures. Numerous tests have shown that some redistribution of the dead-load stresses occurs when the live load is applied. As the live load increases, the concrete stresses increase at a greater rate than the steel stresses. At the ultimate load, the concrete stresses in a composite beam without temporary shores are about equal to those with temporary shores. In other words, whether the stresses are applied before or after composite action, the ultimate stress distribution comes out the same. Since structural design is moving toward the ultimate strength theory, it is probable that future recommendations will permit all the loads to be considered as resisted by the composite section, even if shoring is not employed during construction.

Deflections

Deflections must be considered with composite construction just as with ordinary construction.

If a composite beam is not shored, it is then necessary to figure two deflections —one for the dead load, which is supported by the steel beam alone, and one for the loads that are supported by the composite section. The two deflections are added. If the composite section is shored then only one deflection figure is necessary. The unshored beam will have a greater total deflection than the shored beam. If shoring is used, it should be installed tightly against the beam but not wedged so that the beam is cambered upward.

Cost Comparisons

The example shown indicates a cost saving of 21 percent by the use of a composite beam instead of a conventional steel beam. This figure does not include the 4″ reduction in construction height. (A comparison of the moments of inertia shows that the decrease in depth is not accompanied by an increase in deflection.) The cost of fireproofing the composite beam would be less than for the conventional beam, should fireproofing be required—lath and sprayed lightweight-aggregate/plaster on the beam sides and bottom costs about $.70/sq ft of fireproofed surface. This method also weighs less than conventional concrete fireproofing, increasing savings further beyond the 21 percent indicated.

Other Composite Ideas

The steel beam is not the only element that may be used in a composite section. A precast-concrete beam may be used in a similar manner, the slab being poured on top of the precast beam in the same way as with the steel beam. Shear connectors in this case may be stirrup loops projecting into the slab with shear keys (depressions) in the top of the precast beam.

Other suggestions are the use of steel channels or plates on the tension sides of concrete beams. Either of these sections could form the bottom beam soffit and replace the reinforcing bars in the beam. Suitable long shear connectors would be provided to make the two materials work together. This idea could be extended to cover three sides of a concrete beam with steel plate.

It is possible that when composite construction achieves wider use, the steel companies might find it to their advantage to make special rolled sections to suit this type of design. This proposed rolled section would be unsymmetrical, with only enough top flange for attachment of shear connectors. Such a section would be more economical than the present beam sections with their neutral axis in or near the top flange of the beam where the metal is not too useful. Investigations are being made into the possibility of using unsymmetrical welded plate girders in composite construction.

In the near future, steel shear connectors may fade out of the picture to some extent. The composite action may be developed by an adhesive applied to the top flange of the beam. The last few years have seen such rapid advances in the use of epoxies that this idea may not be so fantastic as it appears at first thought.

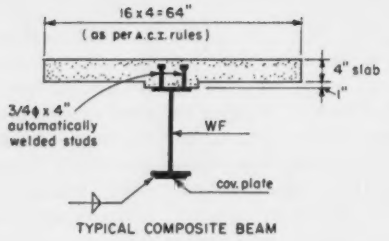
Composite construction can be a successful method for reinforcing existing framing. This was done recently to the roof of an existing one-story school wing, so that it could act as the floor of a new industrial arts shop. The existing concrete plank was stripped off and cover plates were welded to the bottoms of the existing beams; then the slab forms were erected and studs were welded to the beams using the forms as work platforms; finally the slabs were poured. The beam connections and the columns were checked for the increased loads and were reinforced by welding where necessary.

Conclusion

The use of the composite construction in building work will certainly increase as the system becomes more widely understood. There are often substantial savings to be effected by the method. However, there are also situations where it will not meet building-code requirements or will not be the most economical. The composite system should be given consideration whenever a concrete slab

is used in conjunction with steel framing.

It should also be mentioned that the design of a composite system is not simple; it takes longer and is more expensive to work out than conventional design. The use of tables and other short cuts that have been developed are already reducing this differential. Past experience with various types of structures also tends to make each new job easier and less costly.



TYPICAL COMPOSITE BEAM

SECTION PROPERTIES OF COMPOSITE BEAMS*

(Abbreviated table)

WF	COVER PLATE	S	I	$\frac{I}{Q}$ cov. pl.	$\frac{I}{Q}$ conc.
12 WF 27	—	52	556	—	13.3
"	5 x 1/2	83	805	34	14.3
"	5 x 1	113	1030	24	15.1
14 WF 30	—	62	738	—	15.0
"	6 x 1/2	105	1115	36	16.5
14 WF 34	6 x 1	153	1470	27	17.4
16 WF 36	—	80	1035	—	16.9
"	6 x 1/2	127	1470	43	18.5
"	6 x 1	173	1850	30	19.5
18 WF 50	—	119	1600	—	19.4
"	6 x 3/4	193	2300	44	21.5
"	9 x 1	270	2840	32	22.5

*All units : Inches or powers of inches of steel.
Conc.: f'_c = 3000 psi, n = 30 (to allow for creep)
Steel: f = 20,000 psi

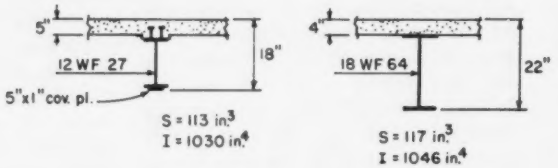
Example: Design a beam carrying a uniform load of 1650 pounds per foot on a span of 30 feet. Use temporary shoring.

1. $S = \frac{1.65 \times 30^2}{8} \times \frac{12}{20} = 186$ kip ft x 0.6 = 111.5 cu in. required
   Use composite 12 WF 27, cover plate 5 in. x 1 in. bottom

2. Cover plate
   $F_{end} = \frac{52 \text{ cu in.}}{113 \text{ cu in.}} \times 5 \text{ sq in.} \times 20 \text{ ksi} = 46$ kip; use $\frac{5}{16}\triangleright 8$ each end
   $\text{Length} = 30\sqrt{\frac{111.5-52}{111.5}} + \frac{2 \times 8 \text{ in.}}{12} = 23.1$ ft; use 23 ft long
   Int. weld: $v_{max} = \frac{VQ_{cov}}{I} = \frac{1.65 \times 23}{2} \times \frac{1}{24} = 0.79$ kip per in.
   use $\frac{5}{16}\triangleright 2\text{-}12$

3. Studs
   $\text{Number} = \frac{2F}{q} = \frac{2MQ}{qI} = \frac{2 \times 186 \times 12}{4.2} \times \frac{1}{13.3} = 80$ studs (approx)
   F = Total compressive force in concrete at midspan = $\frac{MQ_{conc.}}{I}$
   q = Allowable shear per stud = 4.2 kips
   $\text{Spacing} = p = \frac{q}{v} = \frac{qI}{VQ_{conc.}}$; minimum spacing 3 in.
   At end of beam: $p = \frac{4.2 \times 13.3}{1.65 \times 15} = 2.26$ in. < 3 in., use two rows
   At end of cov. pl.: $p = \frac{4.2 \times 15.1}{1.65 \times 11.5} = 3.34$ in., use one row
   Spacing varies inversely as distance from midspan, establish final spacing from each end:
   2 Rows: 1 @ 2 in., 8 @ 5 in., then 1 row: 11 @ 4 in., 6 @ 6 in., then rest 1 row @ 12 in. Total 80 studs

4. Conventional steel design requires 18 WF 64



5. Cost comparison

Composite: 12 WF	27 x 30 =	810	
cov.	17 x 23 =	391	
		1201 lbs steel @ .15 =	$ 180
studs		80, each @ .45 =	36
welding, shoring			12
			$ 228 total

Conventional: 18 WF 64 x 30 = 1920 lbs steel @ .15 = $ 288 total

Saving: $\frac{288-228}{288} = 21\%$

Closed-Circuit TV

BY ROBERT E. VENDELAND

Until recently, a major block in the development of closed-circuit television has been the inflexibility of available systems. An architect planning a system with his client has had to determine, before installation, the exact camera (studio) locations and receiver outlets. If the client found additional applications for closed-circuit television after the system was installed, new studio locations could not be added without major system changes. In this article, the author—who is Manager, Closed-Circuit Division, Jerrold Electronics Corporation—discusses types of closed-circuit systems, data required for the architect's electrical engineer, and suggestions for obtaining pertinent information from the client; and describes a newly developed system that adds flexibility by providing wall outlets into which either camera or receivers can be plugged, permitting distribution of a variety of functions—video, audio, and control—all over one cable.

Visual communications—possible today through television—have added a new architectural consideration as important to early planning as the placement of windows. Closed-circuit television is in effect a two-way window connecting rooms within buildings, and between buildings, in combinations limited only by the imagination.

Architects familiar with the application of master television antenna systems in apartment houses and institutions recognize the desirability of early conduit planning and are fully aware of the basic considerations. Closed-circuit television, on the other hand, adds mechanical requirements to planning which demand far more consideration than that for conduit. As this private television service—fast becoming an integral part of the operation of many institutions—expands its utility in the transmission of business data, face-to-face meetings, display of product models, education and sale of goods and services, architects will be asked to provide such facilities in more and more major buildings.

It is one thing to contemplate the future for closed-circuit television, to make sweeping predictions of things to come, and to tell the architect and his electrical engineer that they must consider television for schools, hospitals, and office buildings. It is not so simple a matter, however, to pin down *exact* requirements, design the proper conduit system, provide additional lighting, and allow for larger air-conditioning capacity —all within a tight budget. It is especially difficult when the future owner cannot predict his *exact* use of his television system.

As a specialist in visual communications, the author has found that one of the major difficulties facing the architect, as he evaluates television for his client, is that too little information can be obtained in answer to the following questions:

1 What can television do today that makes it worth considering?

2 What will television be able to do for the owner in the immediate future that will make built-in installation worth while?

3 What problems can be expected later, if the owner elects to save on his initial investment by ignoring visual communications requirements?

This article will attempt to deal with the capabilities of visual communications, touch on the major considerations that should be discussed with the client, and outline the information that is vital to the engineer who will be required to convert future communication objectives into hard, minimum cost conduits.

Types of Closed-Circuit Systems

Closed-circuit television, architecturally considered, falls into three major types of systems:

1 The easily explained and much publicized "observation" system. The camera is usually placed in a position appropriate for viewing an operation or a location that is not easily viewed directly. In such cases, the camera and viewer are located relatively close together and a single operator observes a single picture on a single monitor. As this type of closed-circuit "observation" system is refined, a series of these single systems terminates in one place and the observer multiplies his usefulness by observing several locations at once. Machine watching, door watching, shoplifter watching, and just plain "watching" fall into this category. Most security systems are of this type.

2 The "dissemination of information" system. Information important to tenants throughout a building or group of buildings is distributed as television pictures, through cables, to all parts of the area.

Usually a small studio or group of studios is established in one part of the area and information is cablecast from this location. Pictures can be fed into the network from off-the-air pick-up, microwave pick-up, telephone company facilities, or from selected locations within the network itself. Educational television, private entertainment, national closed-circuit medical telecasts, national sales meetings over closed-circuit television, front-door watching in an apartment house so that the tenant knows whether she wants to push the door-release button, and ticker-tape telecasts within an office all fall into this second category. 3 The "two-way exchange of pictures" requirement rounds out the major uses for television in visual communications. The ability to show a product or talk to a group located at a remote point in the building, while observing reaction on a monitor, is the most sophisticated use for closed-circuit television, and the most difficult to provide within a tight budget. The ability to project pictures in both directions over a cable connecting the penthouse executive offices of a 20-story building to a sales conference room on the second story, saves valuable executive time, and can contribute spark to a sales meeting.

The architect, discussing television considerations with his client, can assist his engineer immeasurably if he leads the future owner's thoughts to the above three possibilities. The author has found that the vast majority of television applications—regardless of industry, building type, or institution—will fall into one of these categories. Once the potential owner considers television as an aid to building security (Case 1), as an information-disseminating service (Case 2), or as a two-way communication channel (Case 3), the architect is well on the way to gathering the program information needed by the engineer.

Data for Electrical Engineer

When translating a *security requirement* to his engineer, the architect should provide answers to the following questions:

A Where will the security control center be located?

B What locations must be under television surveillance?

C What operations, such as opening and closing of doors, talking to people, or badge identification, must be performed remotely from the security control center?

D What special environmental problems will confront the engineer, such as climate, vibration, dust, etc.?

When considering television for the *dissemination of information*, the architect should consider the following questions:

A Must the system deliver off-the-air entertainment television channels? How many? How many are local channels? How many are distant?

B Where must entertainment be delivered? Will one outlet per tenant be adequate? Is there a preference for location within a particular room?

C Will this system be called on to deliver private closed-circuit telecasts from the telephone company facilities, to all locations—or must these go to selected locations?

D Will this system have its own studios? Where will they be located?

E Will remote originations be necessary? Where?

F Will these originations go to all—or to selected tenants? Can the selection be determined now, or must it be at random?

G Will it be desirable to originate programs within the building to feed to telephone company facilities for national closed-circuit telecasts?

The remaining category of *two-way television* is more difficult to specify. The ability to install a television-telephone is within the state-of-the-art today, but present-day costs make such installations impracticable. However, key two-way visual communication points can be determined and can be justified as an investment. Visual data systems, which are no more than two-way television links, are being used in banks today; engineers exchange product and blue-print information over two-way television links. The architect must try to answer the following questions:

A Where are key people or where is key information located?

B Who must see the people or the data?

C What type of information must be shown? Example: an 8½″ x 11″ page of elite type is the limit of today's average industrial TV camera.

Determining Needs

It usually helps the user's thinking, in determining his needs, if questioning takes the following direction:

1 What are the major departments within the organization?

2 What information is vital to people *within* the department? Will a picture of any person, product, or data be of value to another in the department? Will this picture help him do a better job?

3 Can any operation be by-passed if television is used within a department?

4 Can this particular department do its job better if it has a picture from another department within the organization?

5 Can this particular department do its job better if it sends a picture to another department to speed up a service the other department does for this one?

6 Can orientation of new employes be speeded up with a picture?

7 Can training of employes be improved through the use of television?

8 Can personnel interviewers do a better job for this tenant if they can show a picture to prospective employes?

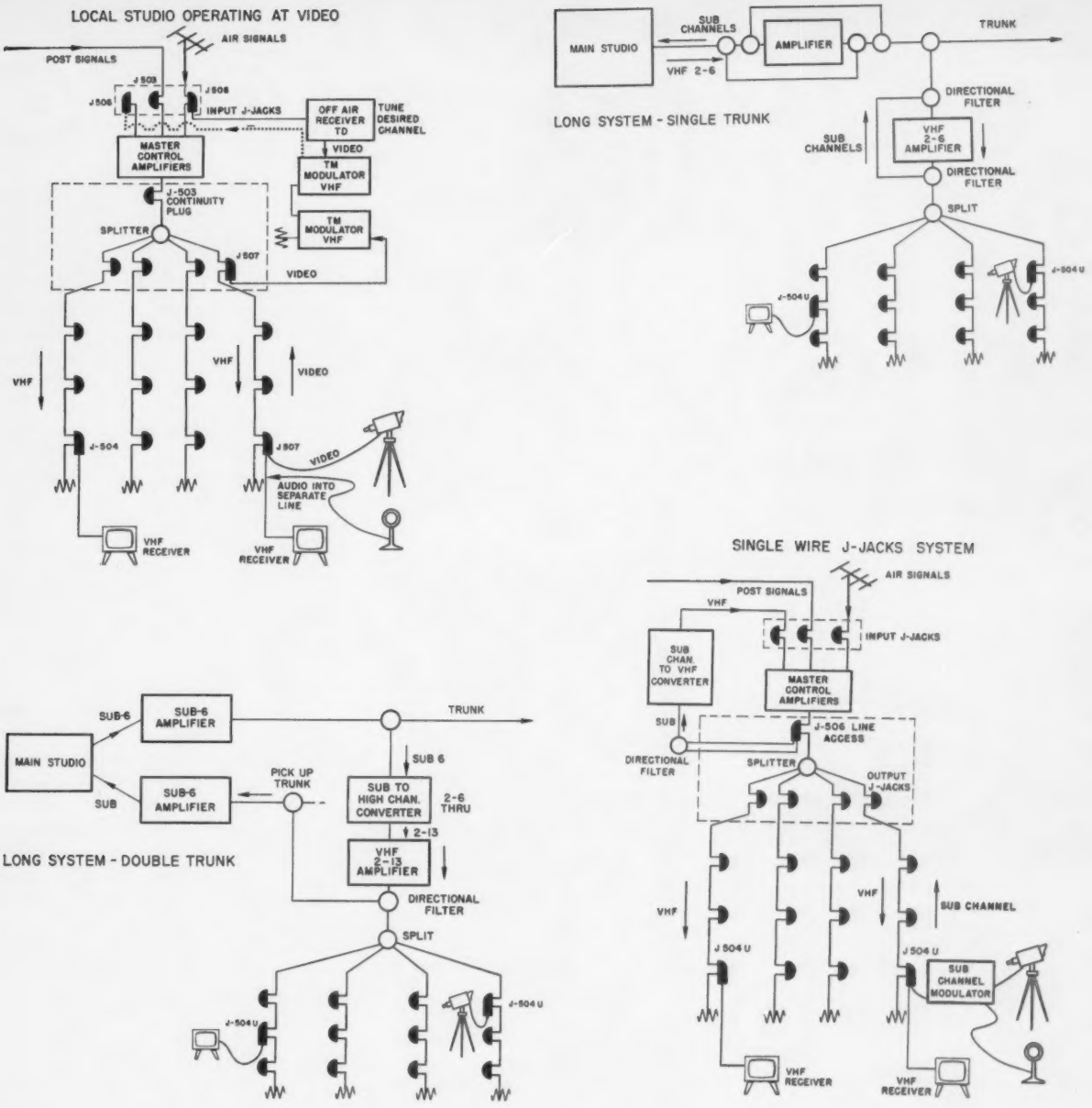
9 Will the ultimate supervisor of the prospective employe save time if he can observe portions of the interview, and actually "meet" the interviewee over TV?

Answers to these questions may be supplied by the building owner for each department of his organization, and from this data the architect and engineer can develop system requirements.

Newly Developed System

A new concept in closed-circuit television has been developed by Jerrold Electronics. As a solution to the problem of providing systems that would permit the architect a maximum in future capabilities, at a conservative investment. Attempting to meet the most complex requirement of any of the above systems —that of two-way television—engineers were faced with the design problems of originating into a coaxial cable on one day, while taking a picture out of this same line on the next. In some locations both would have to be accomplished simultaneously.

The solution to the problem is quite simple, when the techniques employed are those that broadcasters use. In essence, this system becomes a self-contained, private-broadcast band for each major tenant of a building. The J-Jacks system consists of a series of cable plug-in devices. Each plug-in unit is, in effect, an antenna that works into a cable much as a home antenna or a TV station's antenna works in the air. As the owner wishes to transmit a picture from one part of his building to another, he selects a TV channel, broadcasts into the cable on this channel, and tunes to observe it with a receiver plugged into the cable network in another part of the building. Since no signals radiate from the cable, the owner is his own Federal Communi-



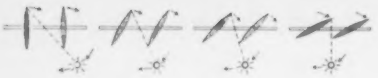
Block diagrams of TV distribution systems with J-Jacks.

cations Commission. He allocates frequencies as he sees fit. The entire broadcast band of AM, FM, and Television is at his disposal.

When the engineer designs a J-Jacks system, he provides a private-cable network for each tenant or department. These individual networks are cross-connected through trunk lines for interchange of information.

Once the basic networks are established, it is a simple matter to insert off-the-air programs, private closed-circuit programs, and local originations into the trunk lines. Since the system consists of easily changed plug-in devices, it can be reconnected at will. Every TV receiver outlet can become a camera input in a matter of seconds. Large complex systems have been installed which actually permit two-way voice conversations, as well as complete remote control of the cameras over the same, single cable network.

Once the prospective owner decides that he wishes to provide entertainment or educational television throughout his building and can justify this investment, the J-Jacks system provides for closed-circuit origination at every receiver outlet. Armed with the flexibility of this system, the engineer can, at a minimum investment, provide for most visual communication requirements through standard 4x4 electrical boxes and ¾″ thin-wall conduit. However, to specify conduit runs properly, to locate outlets properly, and to assure proper zoning of private networks, the architect should attempt to provide his engineer with answers to as many of the questions raised in this article as possible.



Powered Louvers Diminish Heat Gain

BY WILLIAM J. McGUINNESS

Corrective, automatically-controlled, power-operated sun louvers, on east and south walls of a California bank building, allow one of its two cooling units to keep indoor climate cool when outside temperatures are in the 90's. Before installation, two 50-ton compressors failed to keep the building comfortable even on days when outside temperatures were in the mid-70's.

If a building is arranged to intercept the intense rays of the sun before they pass through its glass walls instead of afterward, the air-conditioning heat-gain load can often be cut in half. In approximate terms, the external shading rejects about 80 percent of the fierce attack of solar energy while the internal shading accepts and reradiates 80 percent of it. The outside louvers have a chance to cool off in an occasional breeze, but the inside drapes are part of a heat trap and they constitute a system of hot-weather radiant heating which discomforts those who must work near perimetric surfaces.

Just how fierce is the sun? Compare it to the heating effect of cast-iron steam radiation. Each square foot of such radiation produces 240 Btu per hr. The amount of energy passing through one sq ft of unshaded glass on an east wall in the morning is often evaluated at over 200 Btu per hr. (The longer wall of the pictured building faces east.) It can be rather frightening to think of an entire wall, blanketed *in summer* by a heat-producing source which is potentially almost as powerful as cast-iron radiation. The rejection of a maximum amount of this solar energy begins to appear almost mandatory.

The upper photograph shows the new building of the Fidelity Federal Savings and Loan Association of Glendale, California in 1956. In spite of the advantages of full air-conditioning, heat-resistant glass, and the use of fully-closed inside drapes, employes moved their desks as far as possible away from the hot exterior walls. Two 50-ton compressors running continuously failed to keep the building comfortable even on days when the outside temperature was only 73 F. The heated drapes were found to be an unwanted radiant-heating system which effectively cancelled the cooling efforts of the air-conditioning plant. The temperature between the glass and drapes was 120 F with thermometers facing *in*. (The working temperature of radiant surfaces for heating in winter is often set at 115 F.)

After spending about $2000 on an experiment with metallic-lined drapes, which aided little, and another $2000 to replace one of the compressors which broke down from overwork, the management knew that a major change was necessary.

In September 1959, a contract was let to install exterior, automatically controlled, power-operated sun louvers on the east and south walls. (The north and west walls are solid brick.) As soon as they were installed, relief was apparent. One of the two cooling units kept indoor climate cool when outside temperatures were in the 90's. Employes near windows were perfectly comfortable. Much light but little heat was reflected into the building. As the sketch shows, the louvers are not fully closed, even when the sun's rays are in a plane perpendicular to the glass. Without attendance, the louvers turn to exclude the sun as it's relative position changes through the day. They open fully when the sun no longer shines on the controlled façade, or when cloudy conditions prevail. Louvers were manufactured by the Lemlar Manufacturing Company of Gardena, California.

There are numerous other methods of external shading. On the south, slatted shades or grills do a good job, but this is an easy orientation to control. On east and west glass, it is difficult to beat an operable louver if one is to have a view through these surfaces at *any* time.

Finally this example gives cause to consider whether, in the best planning, there is ever any justification for accepting the suns rays through glass, to be intercepted only by *interior* shading devices.

Office personnel are more productive working in electronically clean air

The trend to pure air indoors is accelerating in all types of buildings. Leading the way are office buildings. *Entire buildings*, not just "select floors," are being provided with air that's electronically cleaned and charcoal filtered—free of odors and airborne dirt. In such a fresh, clean atmosphere, employees enjoy new vitality, are more productive. Pure air also keeps interiors beautiful, cuts maintenance costs.

Assure your clients of pure air indoors by recommending a Honeywell Electronic Air Cleaner and Charcoal Filter system. This system removes odors and 90% of all airborne dirt. It cuts air conditioning costs, because less outside air is needed for ventilation, enabling you to specify a smaller air conditioning system. Call your nearest Honeywell office, or write Minneapolis-Honeywell, Minneapolis 8, Minn.

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Specifying Builder's Hardware

BY HAROLD J. ROSEN

Advantages and disadvantages of the several methods of specifying builder's hardware are discussed by the Chief Specifications Writer of Kelly & Gruzen, architects-engineers.

There are a number of methods used in specifying builder's hardware or finish hardware. In many instances, an allowance is provided for in the specifications, setting aside a stipulated amount of money which is then used to purchase hardware. On small jobs, the specification writer generally prepares a hardware schedule. On most large projects, however, preparing a hardware schedule requires expert knowledge, and men with special training in this field are usually called in to aid the architect or specifications writer. These men may be members of the A.H.C. (American Society of Architectural Hardware Consultants), or may be representatives of recognized hardware manufacturers.

There are advantages and disadvantages involved with any of the systems described above. When an allowance is set up, it merely postpones the time when the schedule is actually prepared. The average specifications writer is not expert enough to tackle an involved hardware schedule. When a manufacturer's representative prepares a hardware schedule, he is prone to include material which will favor his company.

In writing up a hardware schedule for a specification upon which bids are to be taken, it is to the owner's interest to obtain fair competitive prices based upon certain standards. There are several quality competitive hardware manufacturers of locks, butts, closers, exit hardware, and specialty items. A schedule is generally written using one manufacturer's number designations to limit the size of the schedule, with the stipulation that products of other manufacturers which are considered and approved by the architect as equal to the products specified, may be used.

In lieu of using a manufacturer's number designation, the hardware schedule may be prepared utilizing the Federal Government's Federal Hardware Specification numbers.

A great deal of work is entailed in preparing a hardware schedule. The owner is generally consulted on his requirements. The lock trim design is established. The finish must be determined. The keying system for a large project may be a very involved and intricate problem. When all of these elements have been agreed upon, the schedule is then prepared. However, the final selection of the hardware for the project does not end here.

After bids have been received and the successful contract awarded, the hardware submitted for approval may be that of a manufacturer whose number designations were not used in the preparation of the hardware schedule. Or, on the other hand, if Federal Specification hardware designations were used, it is necessary to correlate the submission made as against the Federal Hardware Specifications.

The Federal Government, through the agencies of the Veterans Administration and Corps of Engineers, has compiled a listing of builders hardware that complies with the Federal Hardware Specifications. In turn, this listing equates the hardware of the manufacturers against one another. With this information, it is possible to check submission of hardware lists against the hardware specified.

The following method for approving hardware submissions is suggested for incorporation in specifications to insure that the hardware submitted for approval is equal to that specified.

Sample Lists and Samples

(a) As soon as practical after award of contract, before any hardware is delivered to the project, the contractor shall submit to the architect for approval, a sample list in the required number of copies listing each of the different items of builder's hardware. The sample list shall be submitted on a form similar to that shown (*below*). Opposite each item listed, provide the specification reference, the name of the article and the manufacturer's name, and catalog number of the item of hardware to be furnished. The manufacturer's catalog, or cut and description of such item shall be submitted with the sample list.

(b) In addition to the sample list, a sample of each different item, in the finish required, properly tagged and marked for identification with the sample list, shall be submitted to the architect for approval.

(c) After approval of all samples and sample lists, a schedule of hardware, showing the quantities, type, and location of all items of builder's hardware required for the project, shall be submitted to the architect in quadruplicate for his records. The schedule shall contain the catalog numbers of only the items that appear on the approved sample list. Approval of the hardware schedule is not required, only the sample list.

The approval samples will remain on file in the office of the Clerk-of-the-works until all other similar items have been installed in the project, at which time the items on file will be delivered to the contractor for installation in predetermined locations on the project.

Hardware Sample List

ITEM NO.	PROJECT SPECIFICATION REFERENCE TYPE OR CATALOG NUMBER	NAME OF ITEM	MANUFACTURER'S NAME & CATALOG NO. OF ITEM TO BE FURNISHED

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• Research is constantly employed at Sloan finding ways to make our Flush Valves better. The Segment Diaphragm is one result. This diaphragm costs a lot more to make, but we know it is a superior product which adds to that bonus of quality you expect from Sloan.

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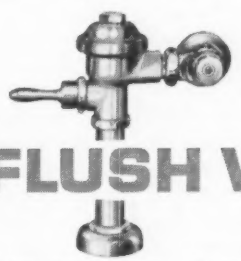

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Construction Contracts—Part 1

BY JUDGE BERNARD TOMSON & NORMAN COPLAN

First of four articles in which P/A's legal team discuss the new AIA construction-contract forms.

An analysis of the construction-contract documents prepared by the American Institute of Architects is particularly timely, in view of the issuance of a revised form for "The General Conditions of the Contract for the Construction of Buildings" *(AIA Document No. A-201, 1958 Edition)*. The revised edition of the "General Conditions" should be studied not only to determine what changes were made, and their significance, but also to consider in what further respects the construction-contract documents could be improved.

The AIA "General Conditions" are seldom incorporated into the construction contract without accompanying supplementary conditions or amendatory provisions modifying the AIA form. The need for supplementation and amendment often results in ambiguous or conflicting provisions, for these changes are usually made by the architect without benefit of legal advice. Further, the contract is very often offered for bidding, or entered into, without prior review and approval of the contract documents by the owner's attorney. Consequently, continuing efforts to improve the AIA "General Conditions"—to make them more comprehensive and effective—should be urged by the profession in order to reduce the necessity for supplementation and modification.

Article 1 of the revised AIA "General Conditions" is titled "Definitions." The contract documents are defined as including the "Agreement," the "General Conditions of the Contract," the "Supplementary General Conditions," and the "Plans and Specifications." Thus the only change from the older editions is the inclusion of "Supplementary General Conditions" as part of the contract documents. This is a desirable change, but there has been no similar amendment of the 1958 edition of the form agreements which are to be used in conjunction with the "General Conditions" *(AIA Documents No. A-101, A-111)*. These forms also include a description of the contract documents, but have not been modified to conform with the changes made in the "General Conditions." It is, of course, extremely important that the form agreements coincide and correlate in all respects with the "General Conditions," so that there will be no contradiction or ambiguity in the documents which make up the contract.

The revised definition in the "General Conditions" makes no reference to those documents which are generally utilized when a project is offered for bids. "Instruction to Bidders" and a form for the "Contractor's Proposal" are usually included in the contract "package" which is submitted to contractors for bidding purposes. These documents contain terms and conditions which are to be binding upon the contractor, if his bid is ultimately accepted. For example, the contractor's proposal not only sets forth his bid, but often contains representations and acknowledgments on the part of the contractor concerning his ability to perform the work. Consequently, the definition of the contract documents in the "General Conditions," which is a form document for general utilization, should be sufficiently broad to include bidding documents such as "instructions to bidders" and "form of proposal" which contain some of the most vital provisions of the agreement between owner and contractor.

The architect's plans and specifications are expressly included in the definition of the contract documents set forth in the revised "General Conditions." The contractor thereby undertakes to perform the work in accordance with such plans and specifications. However, is this undertaking sufficient from the owner's or architect's points of view? It is certainly of importance that the owner be assured not only that the contractor will execute the architect's plans and specifications, but that the contractor understands the plans and has the ability and facilities to execute them properly. Further, if the contractor is of the opinion that the architect's plans and specifications are inadequate or unsuitable, he should not undertake to perform the work or to bid on the project. One of the most frustrating experiences that an owner or architect can have, arises when a defect appears in the structure which apparently has been caused by improper workmanship or materials on the part of the contractor, and the contractor seeks to absolve himself from responsibility by contending that the architect's plans were inadequate or unsuitable and thereby caused the defect.

It would not appear sufficient, therefore, for the "General Conditions" of the construction contract merely to provide that the plans and specifications are to be considered part of the contract, but the contractor should expressly make a commitment in respect to his understanding, ability to execute, and suitability of such plans and specifications. A suggested clause is:

"The Contractor acknowledges:

1 that he understands the plans and specifications,

2 that he has the equipment, technical ability, personnel and facilities to construct the project in accordance with the plans and specifications,

3 that the plans and specifications are, in his opinion, appropriate and adequate for the construction of a sound and suitable building project."

There are other obligations of the contractor in relation to the architect's plans and specifications which should be expressly included in the "General Conditions." These provisions will be discussed in next month's column, which will continue this review of the construction contract forms of the AIA.

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Mutual Stimulation Praised

Dear Editor: I saw the friendly biographical lines in your February NEWS REPORT issue and my flattering image side by side with Phil's thoughtfully searching face. Perhaps I should add and correct a few things.

It was rather a lonely vacant time for Frank Lloyd Wright when he was good enough to have us, as practically just house guests, for three months, with all our family—including my mother-in-law—in his home at Taliesen, in 1924, I believe. This was immediately after I first met him sadly in a cemetery. It was at Graceland, at the funeral of Louis H. Sullivan, about whose death I grieved very much. Sullivan had been so friendly to me, a stranger, and I still cherish a topaz necktie pin of his which his faithful friends got out of a pawnshop and gave to me, with a letter that comforted my heart.

Wright I had admired since 1910, and it was great to be with him when my oldest son, whom I called Frank L., was a baby. Wright would hold his namesake on his knee, and a year or so ago I discovered an old photo of Frank Lloyd Wright with the little boy, which I believe might interest you. Again, when my youngest son was a baby, we enjoyed the same lovely hospitality in Taliesen, a little changed, but re-visited with delight. This was in the early '40's. It was like twenty years before. Wright looked hardly older then. I had moved to California in January 1925.

Robert Alexander has had my warm friendship for much longer than ten years, and we are still "joint venturing" and will be for years to come. My hopes and wishes are with him in his own work, present and future, to which I, and many, look forward. I have, during the period you mention, worked hard on projects, within and without this collaboration, never exclusively on any one. I hate, as an elderly gent, to feel or be called a "loner" as P/A says—the more so that I am grateful to everybody who has ever shared and participated on tasks posed trustingly by human beings. There has been a long, deserty period of being terribly lonesome, and, but slowly, gaining such confidence, which is more than capital for any architectural achieving.

In this age of mass transactions, on both sides of the iron political drapery, nobody should feel a prima donna, least of all me, and I see blessings in working with each other, either in a smallish, organically grown-together group or in spontaneous supplementary associations. Such sincere, warm-hearted collaborating has its place in the sunshine, for "biological individuality" is not harmed, but helped by it. It's a matter of how we bring up our grandchildren, to what nursery school we send them, long before they take up a life's work. The rugged competitiveness will, not only in our profession, be recognized as a dated cliché; and future generations ought to recognize mutual stimulation as the grand thing it is—again quite biologically speaking.

RICHARD NEUTRA
Los Angeles, Calif.

Deeply Grateful

Dear Editor: Deeply grateful to you for your stand on the Grand Central monstrosity (P.S. FEBRUARY 1960 P/A). You are becoming the conscience of the profession.

EUGENE HENRY KLABER
Quakertown, Pa.

Front-page Subject

Dear Editor: Thank you so much for that wonderful editorial, "Who Would Say No?"! (P.S. FEBRUARY 1960 P/A.) It belongs on the front pages of *The Times* and *Herald Tribune!*

Would that help? I doubt it.

HANS N. WORMANN
New York, N. Y.

If We Work Hard

Dear Editor: Some day if we work hard you will belong to a profession and I will belong to a profession.

Today you and yours are technicians in applied art. Today I and mine are technicians ni applied science.

No member of a learned profession could brook compromise in principle from a lay person.

A vital step in this direction would be limiting building codes ot health and safety measures as they were intended and removing standards of design to some bureaucratic handbook where they belong.

JAMES S. LATENSER, PE
Spokane, Wash.

Paid to Dream

Dear Editor: Regarding the letter of Mrs. Fred C. Van Dusen (Florida), page 56, FEBRUARY 1960 P/A—where she seems to use "Dreamers!" for architects in its most derogatory sense:

While I agree with her wholeheartedly on architects studying human relations, as far as dreams are concerned may I suggest for her as an enlightening reading material, David Riesman's excellent

Continued on page 188

BIRMINGHAM, *Alabama, the geographic center of growing Southern markets, is the only place in the world where the three essentials for steel making (coal, iron ore and limestone) are found in commercial quantities. Long known for its steel products, Birmingham is now diversified industrially. Its 'Committee of 100' has attracted more than 225 new plants, warehouses, sales offices and service organizations during 1950-60. Its new 'Centennial Committee' composed of business, labor and government leaders is spearheading a 10-year progress plan. A $2-million airport expansion is included in a $31-million development plan. A $50-million urban highway program is underway. A newly completed $1-million Art Museum and a $6-million Research and Medical Center further symbolize the modern Birmingham. OTIS has a long-standing "diversification" interest in Birmingham. Over 59% of its industrial and commercial elevators are the world's finest. They're by OTIS.*

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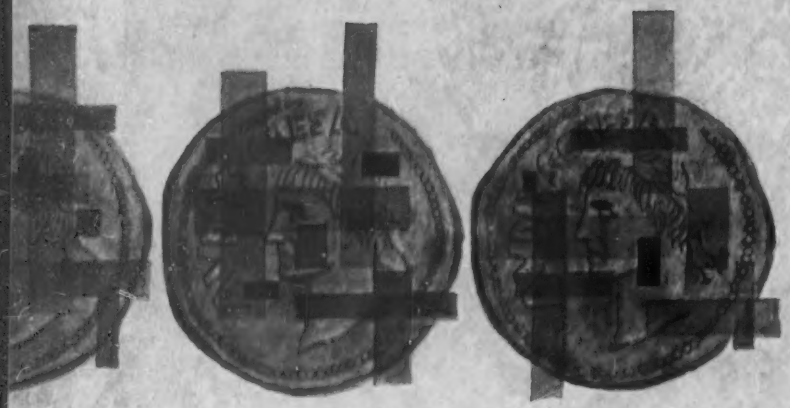

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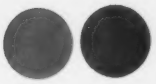
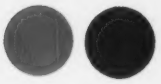
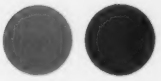
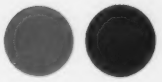
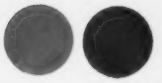
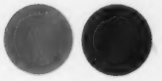
GOLD for sheet applications specify *Kalcolor* 5230 gold; for extrusions specify *Kalcolor* 6320 gold.†		
LIGHT BROWN for sheet applications specify *Kalcolor* 5730 light brown.		
TAN for sheet applications specify *Kalcolor* 3230 tan.		
AMBER GRAY for sheet applications specify *Kalcolor* 1030 amber gray.		
OLIVE for sheet applications specify *Kalcolor* 3245 olive.		
LIGHT AMBER for sheet applications specify *Kalcolor* 5240 light amber; for extrusions specify *Kalcolor* 6330 light amber.†		
AMBER for sheet applications specify *Kalcolor* 5245 amber; for extrusions specify *Kalcolor* 6345 amber.†		
BROWN for sheet applications specify *Kalcolor* 5745 brown.		
CHARCOAL BROWN for sheet applications specify *Kalcolor* 1045 charcoal brown.		
ANTIQUE GOLD for sheet and extrusion applications specify *Kalcolor* 6120 antique gold.†		
DOVE GRAY for sheet applications specify *Kalcolor* 3320 dove gray.		
CHARCOAL GRAY for sheet applications specify *Kalcolor* 3340 charcoal gray.		
BLACK for sheet and extrusion applications specify *Kalcolor* 6140 black.†		

†Sheet and extrusions match in color.

NOTE: Color samples represent *Kalcolor* finishes as accurately as printing method used permits.

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essay, "Some Observations on Community Plans and Utopia" in his book *Individualism Reconsidered* (Anchors edition, page 77.):

"One small group in our society, the architectural fraternity, has continued to produce and stimulate thinking in the utopian tradition—thinking which at its best combines respect for the material fact with ability, even enthusiasm, for transcending the given. . . . Architects . . . are engineers with a difference; their profession would have no future if there were no difference. Architects, that is, are paid to dream—paid even to waste, Veblen would say—but they must not ignore engineering requirements if they wish their structures to stand. Of course, most architects do not dream; they are simply businessmen, and their "waste" is of a most prudent kind, since their customers buy just the right amount of it to qualify for the social status they want. There remains a minority: e.g., Wright and Le Corbusier; Behrendt and the Bauhaus group . . . "

I wish an architect's wife would not only write good letters to respectable editors but also promote her husband's development by understanding the essence of our profession and being an able Public Relations Officer, Manager, Secretary, Ambassador, Interpreter—and a loving WIFE!

ANTHONY HARS
Brooklyn, N. Y.

Report from Down Under

Dear Editor: I am sending you a publication produced by the South Australian Institute of Architects as its responsibility for the division of architecture in the Adelaide Festival of Arts held last month. This festival is the first attempted in Australia and was based on the now famous Edinburgh Festival; reports from overseas visitors indicated that we have well established this festival for future development comparable with the Edinburgh one.

From the book, you will see that all architectural firms here handle a fair cross section of all types of work. With the festival book is also included a small publication which we hand to all new clients, as this covers the important points from the Institute of Architects' Year Book and tells something of our policies.

The interim plan for a greater Adelaide will be brought before Parliament next month and we are hoping for endorsement to enable the final plan to be produced with a bound volume forming the report in approximately 12 months' time. In 1956 the four members of the Committee met frequently to do research work and it was not until early 1957 we managed to have the Government appoint a town planner who, in turn, took the whole of 1957 convincing the Government he needed staff to produce such a work of magnitude. We have had a liberal government in power in this state for 22 years and as you know, town planning is not a popular issue with other than labor governments. At present, the population is just over 600,000 and as this city has the highest rate of increase in Australia by means of a well considered immigration program, we are heading up to a population of one million by 1980 and 1.5 million by the end of this century, and with our present water limitations, this will be about our physical limit.

J. D. CHEESMAN
Adelaide, South Australia

Adult, Civilized, Fresh

Dear Editor: Eero Saarinen's designs for the two new colleges at Yale shown in the January NEWS REPORT strike me as fine and almost unique examples of good work. He has made a significant contribution to maturity in modern architecture by creating buildings whose value rests not only on structural interest and integrity, but equally on response to human needs.

Since straining for effect seems to be the rule today, judging by most of the competition winners, it is a distinct pleasure to see such an adult, civilized, and fresh approach.

FRED BASSETTI
Seattle, Washington

Show the Colors

Dear Editor: You are publishing a good magazine but, if I may suggest, I would prefer to see more color in your pictures of buildings, because it expresses a more realistic view and true expression. Pictures in black and white leave the architect to use his imagination, and may result in uncertain satisfaction as far as color is concerned.

WALTER CESARZ
Lansing, Michigan

Report "Intriguing"

Dear Editor: I am writing to congratulate you on the interesting article, "British School Architects Examine Our Work" (MARCH 1960 P/A). Being from the United Kingdom and an architect I found this report especially intriguing. Unfortunately I was constantly jarred by the words "England" and "English" throughout the article. Please in future use the correct "Britain" or "British" when referring to the British Isles and dispel the illusion that England and Britain are synonymous.

Your publication, P/A, is always a welcome caller at our office and I wish you and your staff well in improving and improving, as your cry must be.

If it is of any value to you I should humbly submit my personal feelings that a more universal coverage of architecture be encouraged like some of the European magazines. You would be reaching for even greater heights in the esteem of architects.

WILLIAM D. ANDERSON
Sudbury, Ontario

The "Deadly" Solar Screen

Dear Editor: The advent of solar screen construction on the American architectural scene poses the problem of the practical vs. the esthetic, the functional vs. the artistic and the normal vs. the abnormal. Hiding behind the subterfuge of estheticism the modern architect has taken the simplicity of geometric design and incorporated it into the solar screen.

It would appear that buildings are being designed on a penal-institution basis; that is, escapeproof. Let no thought be given as to how the occupants can get out in case of fire or catastrophe, much less how firemen can get in to rescue anyone cut off from stairwells and other means of escape.

The fact that solar screen construction is an "attractive nuisance" to children and to some pseudo-heroic adults does not seem to have entered the picture. This is especially true when solar screens enclose stairwells or balconies or are used as dividers and, depending on height, may easily be the means by which bodily injury or death might occur.

The building provisions of the Municipal Code of Chicago specifically prohibits this so-called innovation in design but this apparently does not prevent the innocent imitator from falling victim of a passing fancy and attempting to copy the principle.

As Building Commissioner of the City of Chicago, I have gone on record in various publications pointing out the reasons for the ban this city has placed on the use of this design in certain instances. Any co-operation that can be enlisted in a true spirit of "safety to life" that any publication can advance toward the profession to eliminate the hazards of the use of this design will be far reaching.

GEORGE L. RAMSEY, AIA
Commissioner of Buildings
Chicago, Ill.

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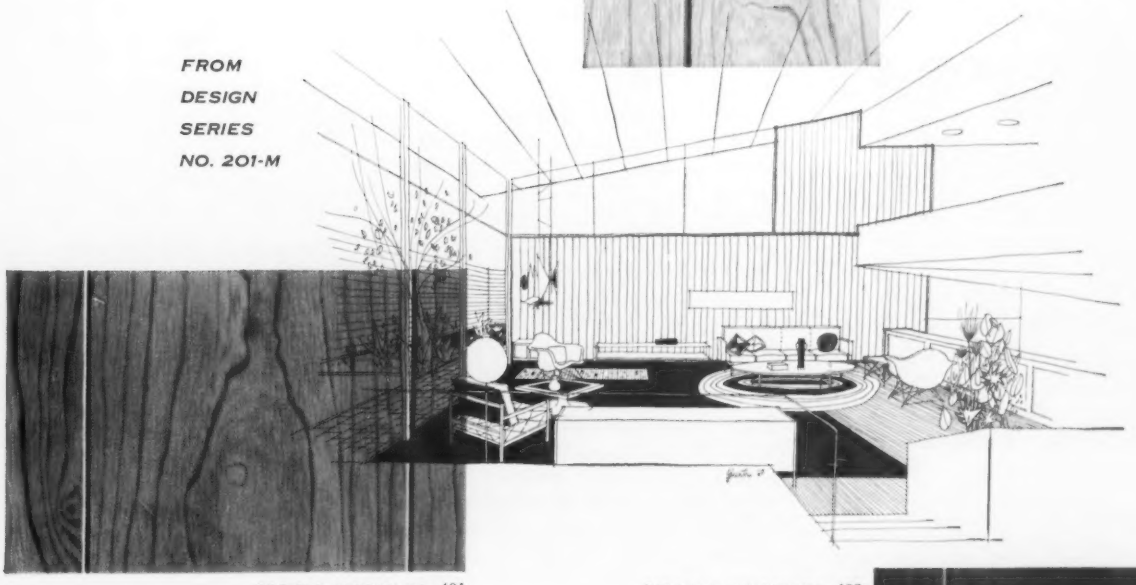

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Prestige Payola in Collection Volumes

BY SIBYL MOHOLY-NAGY

Professor, Pratt Institute School of Architecture, discusses disturbing aspects of recent survey volumes, giving particular attention to Modern European Architecture. *A. Dorgelo. D. van Nostrand Co., 126 Alexander St., Princeton, N.J., 1960. 244 pp., illus. $27.50*

In the general rash of collection volumes dealing with "Modern Architecture," "History of Modern Architecture," "American Architecture of the 20th Century," etc., this latest edition takes a somewhat special place. It is an oversized volume (10″x14″) and sells for the high price of $27.50. In a pre-publication circular the publisher refers to it as "an unparalleled sourcebook of ideas to come from Europe's leading professionals," based on European architecture "since the end of the Second World War." After this introduction, with its slightly embarrassing invitation to cribbing, it is the more surprising to find that of the 48 projects, 18 are more than 10 and some 20 years old, and 23 projects are more than five years old. This in itself would not be detrimental if the buildings shown were timeless in their quality. But apart from a thin sprinkling of famous examples, such as Le Corbusier's Nantes Unite D'Habitation, Oud's Shell-Netherland Building (started in 1939), and Novarina's Church in Assy, France (started in 1945), the selection is one of glaring mediocrity. If this volume was meant to be a modern architectural history, the selection omits the important milestones of architectural and structural developments; if it is meant —as the folder states—to be a "sourcebook" for designers, the selection is, for the most part, provincial and tedious. Such examples as the Kolo Housing Estate in Warsaw from 1947, and any number of other examples: the Palace Hotel in Milan from 1949, the Ostend Casino, The University of Helsinki, the Palazzo Grande at Leghorn, and the Radio Station in Cologne are middling to bad, run-of-the-mill design.

The surprising and in a way depressing aspect of this monumental collection lies in the care and cost that has been expended to supply plans, elevation details, construction specifications, and profuse photographic views of each of the projects. If the selection had been good, this would have been a long step forward in architectural presentation—away from the picture-book collections which convince no one who is familiar with the transformative magic of clever architectural photography. As it is, the careful, and at first sight, very impressive breakdown into collaborators, areas, cubic content, foundations, structural system, mechanical equipment, etc., is largely repetitive because the rigid reinforced-concrete frame dominates the field. It is the basic thesis from which all other factors derive their more-or-less uniform handling.

One wonders who pays the enormous production costs of this and the many other collection volumes of contemporary architecture. Is this a sort of *prestige payola?* If so, it is regrettable in that it establishes standards that should not be perpetuated in "source books." The interspersed examples of important works have been exhaustively covered in international magazines and architectural histories. Their luster should not be used to gild what is not worth gilding, and the names of their designers should not force critical consideration of what does not stand up under scrutiny. It is the opinion of this reviewer that publishers of architectural books would do well to bow to the advice of experts in the field and exercise a more discriminating selectivity.

SIBYL MOHOLY-NAGY
Pratt Institute
N.Y.

Migrants and Minorities

New York Metropolitan Region Study. Volume 3, The Newcomers. *Oscar Handlin. Harvard University Press, Cambridge 38, Mass., 1959. 171 pp. $4*

One of the unique aspects of the New York Metropolitan Region studies, of which Oscar Handlin's is the third, has been the front-page treatment that each of the studies has received in *The New York Times.* Some very important books never make page 34 of the Times' Sunday book section, much less page 1 of the news. But the autograph of The Regional Plan Association, sealed with the imprimatur of Harvard, seems to command the respect of the city editor (if not a Yale man). All of which is to the good, since more people will read these studies—and should.

The apostles of doom to the contrary, New York is hardly a dull region and its problems are what often make it interesting. New York is also here to stay, according to the regional studies, though it will change—in jobs, buildings, and people. Barring a nuclear war or a movement of the stock exchange to Newark, the metropolis will survive to welcome Cambridge's refugees from travail (rare), swink (obs.), ennui (Fr.), *tae-*

Continued on page 194

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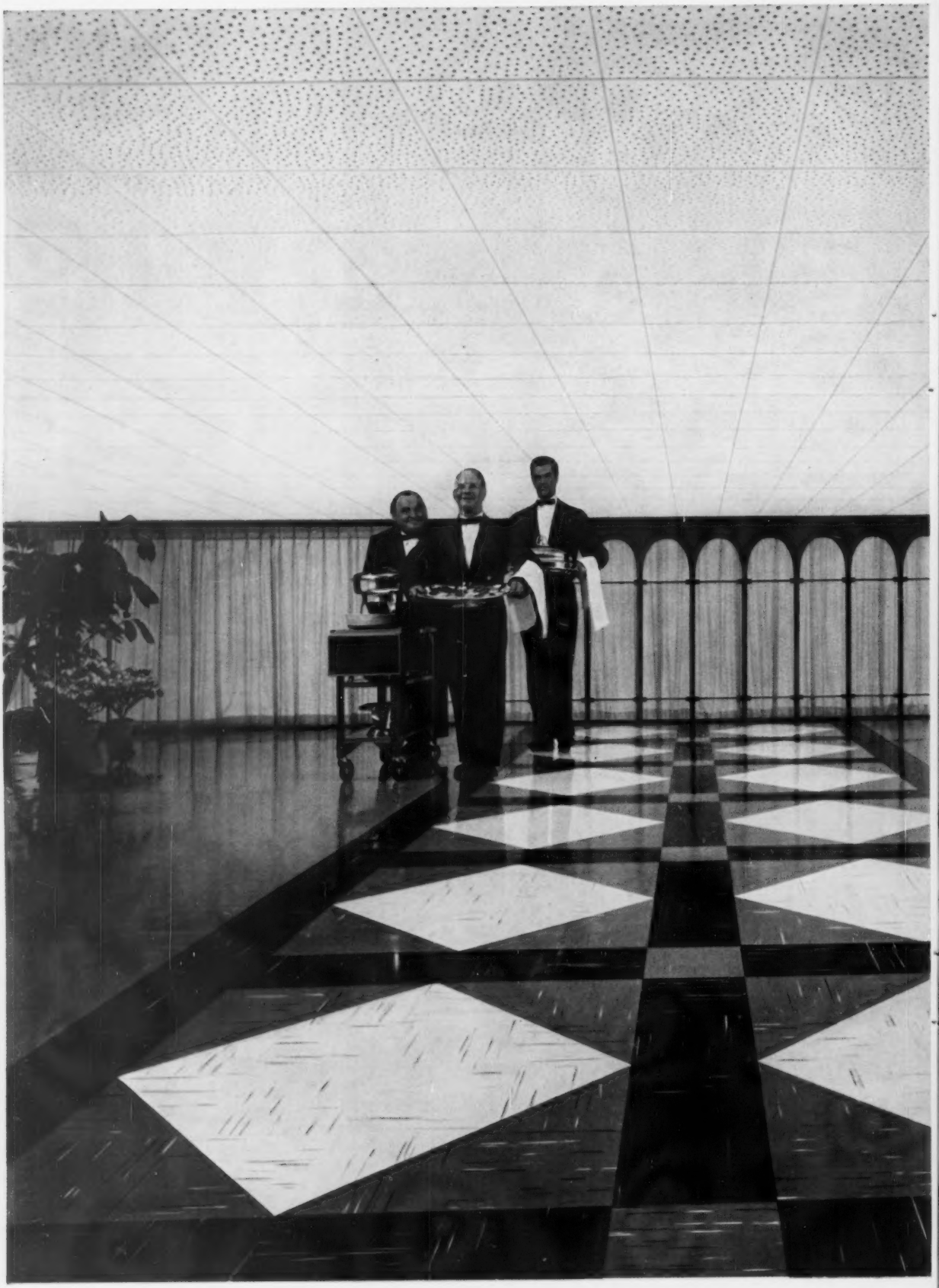

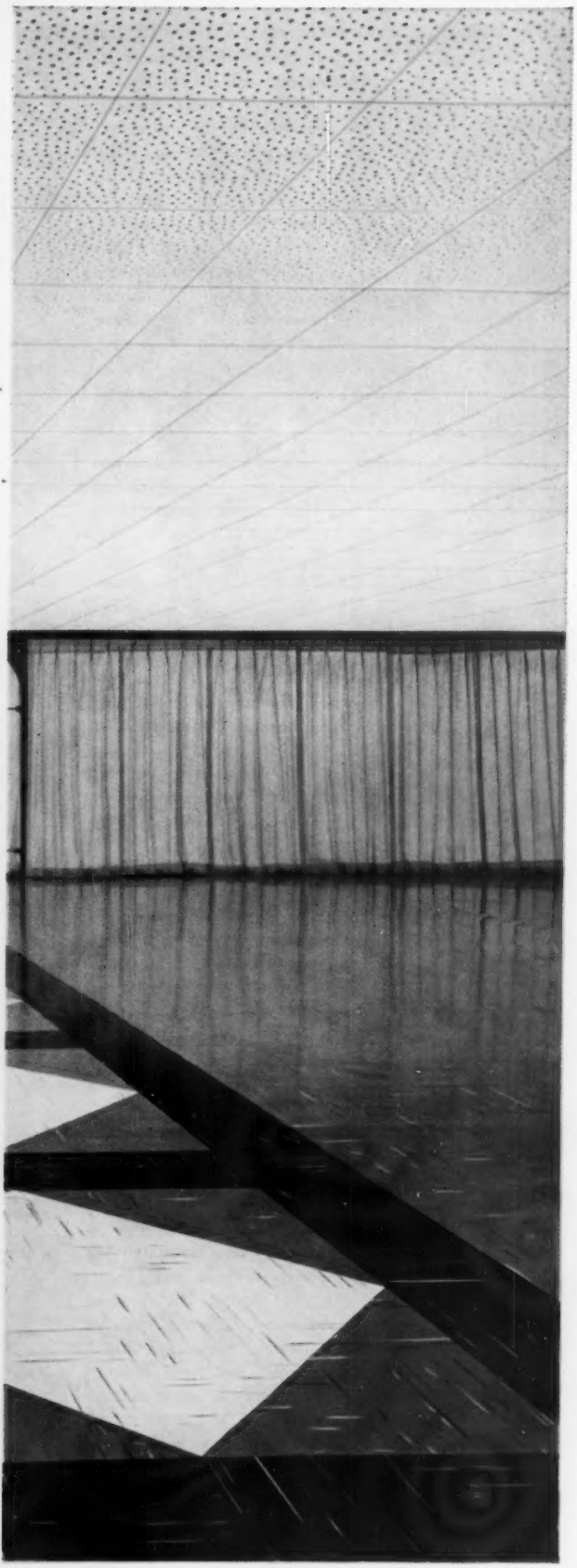

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Continued from page 190

dium vitae (L.), and boredom (Eng.).

Handlin's little book deals with the minority problem in New York City from the days of William the Testy, the great legislator on a small scale who tried to ban tobacco in Nieuw Nederlandts and was smoked into terms. The Dutch, says Dr. Handlin, were shrewd traders and permitted Jews fleeing Brazil to bring their capital with them. The Jews, history records, were shrewd too, and neither side lost in the process.

Dr. Handlin's study goes on to list those later strangers who poured into the sweatshops of the 80's: the skilled and unskilled—the Irish, German, Jew, and Greek. They moved into slums, then into little ghettos in Brooklyn, Queens, and the Bronx, ultimately dispatching their children to settle the frontiers of Westchester, Nassau, and Jersey. There were alcoholism, pauperism, and disease while gangs and juvenile delinquents stalked the city's slums, but ultimately accommodation was achieved. The realities of Tammany politics, the communal leadership supplied by the religious, ethnic, and neighborhood organizations, and the fundamental tolerance of the New Yorker all joined to guarantee it.

In 1930, Negroes and Puerto Ricans arrived on New York's great rotating stage, settling mostly in the old slums of the great metropolis. The new jobs of the growing city were a magnet whose drawing power was not diminished by the baseness of the living conditions. By 1957, New York had lost 416,000 whites and gained 320,000 non-whites. Some 600,000 Puerto Ricans, of whom about four out of five were whites, joined them in the slum settlements of Manhattan and Brooklyn, with only a few turning up in small pockets in the increasingly sensitive suburbs.

New York's Negro population, which between 1870 and 1900 had contributed barbers, waiters, caterers, and skilled artisans (as well as the unskilled) to the city's work force, changed so that most of the newer Negro migrants were now unskilled workers. What the Emancipation Proclamation began but could not finish, the Immigration Laws, Jim Crow, and Boll Weevil accomplished.

The Puerto Rican left his island after the Negro push was well under way, and he found few vacancies to receive him. As the piazza and the warmth of climate and neighbors was replaced by the cold tenements and crowded rooms of Harlem, family ties weakened and social distortions appeared.

The problem was tougher for Negroes and Puerto Ricans partly because they showed a greater susceptibility to mental and physical ailments. Not only were some diseases endemic but the problems faced in the new environments did little to raise their resistance. (The higher delinquency rates, the author thinks, are cyclical historically and are hardly peculiar to Puerto Ricans and Negroes.)

Handlin emphasizes housing as one of the main trouble-spots, with family disruption and delinquency among its inevitable by-products. He concludes that reinforcement of Negro and Puerto Rican life hinges on the extent to which the social milieu helps to define life's goals. But the new environment, the shock of migration, the housing famine, and the feebleness of internal communal institutions all weakened the sense of purpose in life. The Negro suffers even more than the Puerto Rican and there is real danger, unless the situation is improved, that the problems will survive.

But there is also reason to be hopeful, says Dr. Handlin. "If New York con-

Continued on page 196

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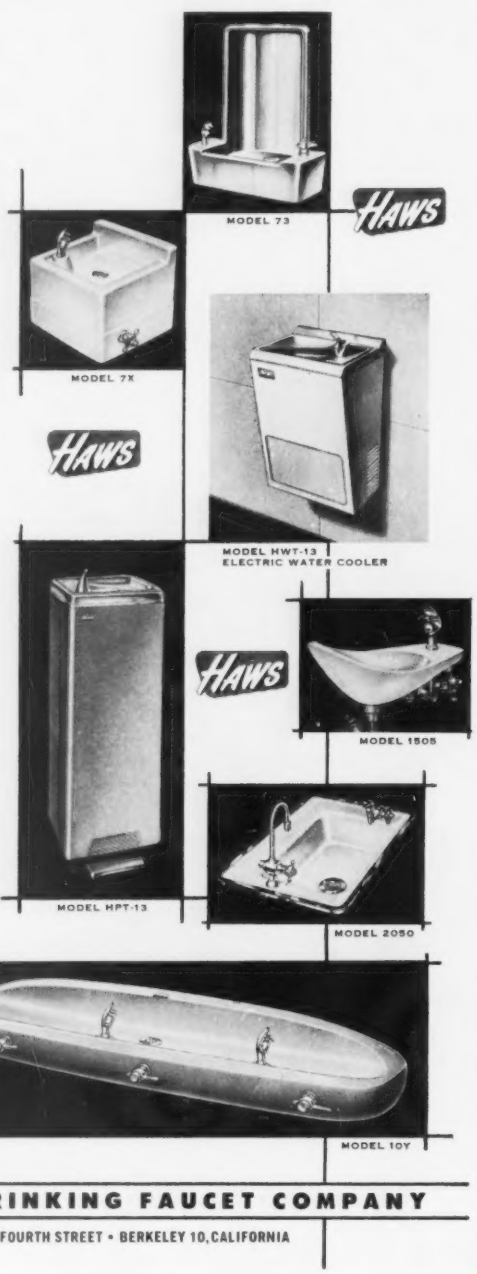

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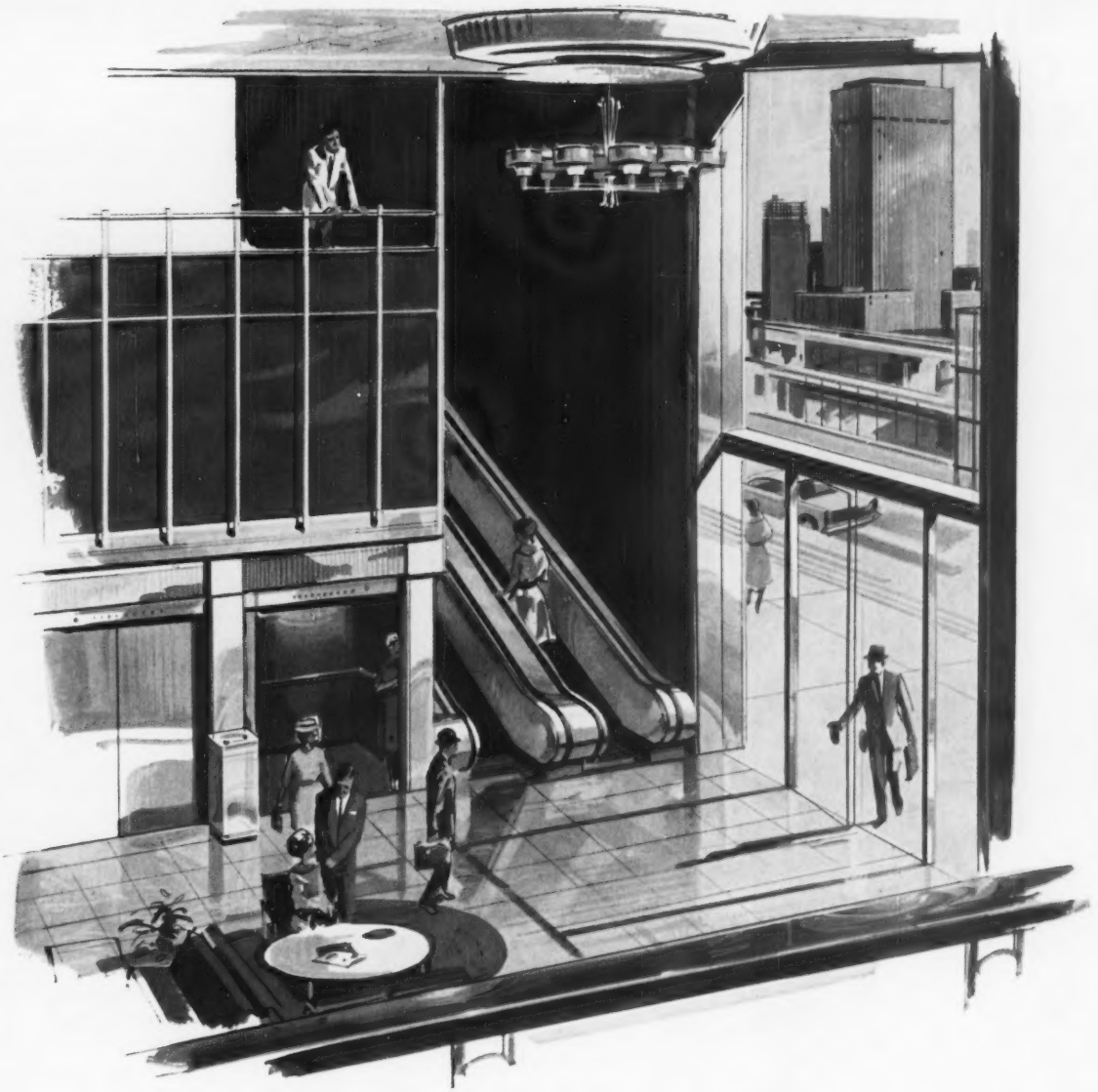

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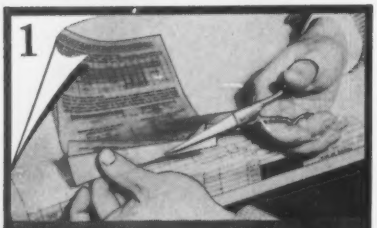

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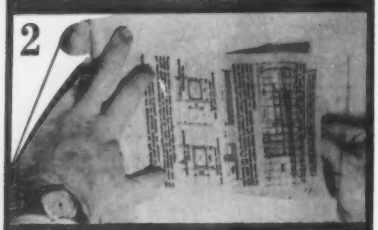

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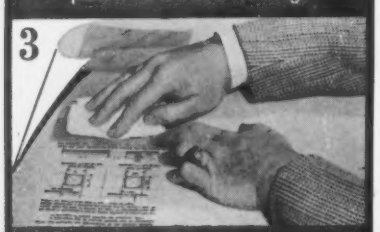

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Continued from page 194

tinues to witness, in the next twenty-five years, as it has in the past decade, an abatement of prejudice in accord with its tradition of diversity, the problem of occupational mobility, of education, and of the competition for space will certainly be eased."

I incline toward reversing the sentence—if the problems of occupational mobility, of education, and of the competition for space are solved, prejudice will abate. I think considerable prejudice is spawned in the competition for space, jobs, and status, and that these are some of the causes that must be removed before bias will subside.

With the author's other conclusions, there should be little disagreement: i.e., only jobs will encourage more migration; more communal organizations are needed to help bring purpose to life; opportunities must be expanded; most of the new migrants will continue living in clusters; the new migrants will continue to depend more on governmental services for education and welfare than earlier migrants.

Dr. Handlin stops there. He offers no concrete solutions to follow his conclusions. This has been characteristic of the prior regional studies, too. I am sorry about this, because it is on the level of action that everything becomes confused and distorted. We are all impressed by these studies and conclude that something must be done, but then our emotions are channeled into a meaningless piece of legislation, or are dissipated in a political diatribe. I'm for regional planning and my friends are, too. But I'm tiring of the Governors and Mayors all saying they're for it and then doing nothing about it. I suspect that since they think there's no chance they can ever agree on the details, they feel safe in advertising the need for it. If Messrs. Rockefeller and Meyner want to plan regionally, they can start within their own states first. Rationalizing New York City and Westchester would be a practical way of showing good faith before trying to cross the Hudson.

A word about Dr. Handlin's style. He has a way of gathering isolated facts and spinning them into an interesting narrative. His book is the best written of the series thus far, and I hope the others that follow will also try to avoid the new style of professional obscurantism which is plaguing our social and economic texts. This volume has a foreword by Dean Edward S. Mason and is dedicated to the late Eliot Cohen who, in his own quiet fashion, made a vital contribution to society by influencing friends who influenced people.

CHARLES ABRAMS
New York, N. Y.

Backgrounds of Urbanism

The Growth of the Western City During the Middle Ages. *Carl Birger Troedsson. Transactions of Chalmers University of Technology, Gothenburg, Sweden, No. 217, 1959. Distributed by Dawsons Book Store, 550 S. Figueroa St., Los Angeles 17, Calif. 124 pp., illus. $4*

This volume, evidently done as a dissertation at the Chalmers Institute of Technology in Gothenburg, Sweden, is an excellent survey of its subject. Relying largely on the work of such older scholars as Gantner, Pirenne, and Lavedon, the author traces the development of West European cities during the centuries when urbanism was a vital and expansive force in England and on the continent. While the book is in no sense an original contribution to scholarship, it does represent wide reading among some of the foremost historians of urbanism. Troedsson's use of Scandinavian sources is particularly welcome. These are generally little known in English-speaking lands, and except for Steen Rasmussen's essays, have hitherto been almost inaccessible.

The writer's focus is primarily social and political, but this limitation should not deter the enterprising urbanist. The book contains one of the best discussions in English on the complicated contest between the medieval communes and the centralizing powers, represented in France by the monarchy and in Italy by the pope and the emperor. Troedsson's treatment of the important role played in the late Middle Ages by the various city leagues, such as the Hanseatic, is also excellent. This reviewer's only criticism of his historical interpretations is that he perhaps overstresses the connection between the establishment of the communes and the rise of Gothic architecture. Recent scholarship has tended to identify the Gothic as a *royal* style in its origins, once created at the behest of the kings of France. It is certainly true, however, that the style was immediately seized upon by cities for all sorts of non-royal purposes.

The most valuable portion of the book is probably the section on the medieval origins of Stockholm and Copenhagen. Since these cities have become pilgrimage centers for architects and planners from all over the world, information on the early phases of their development is

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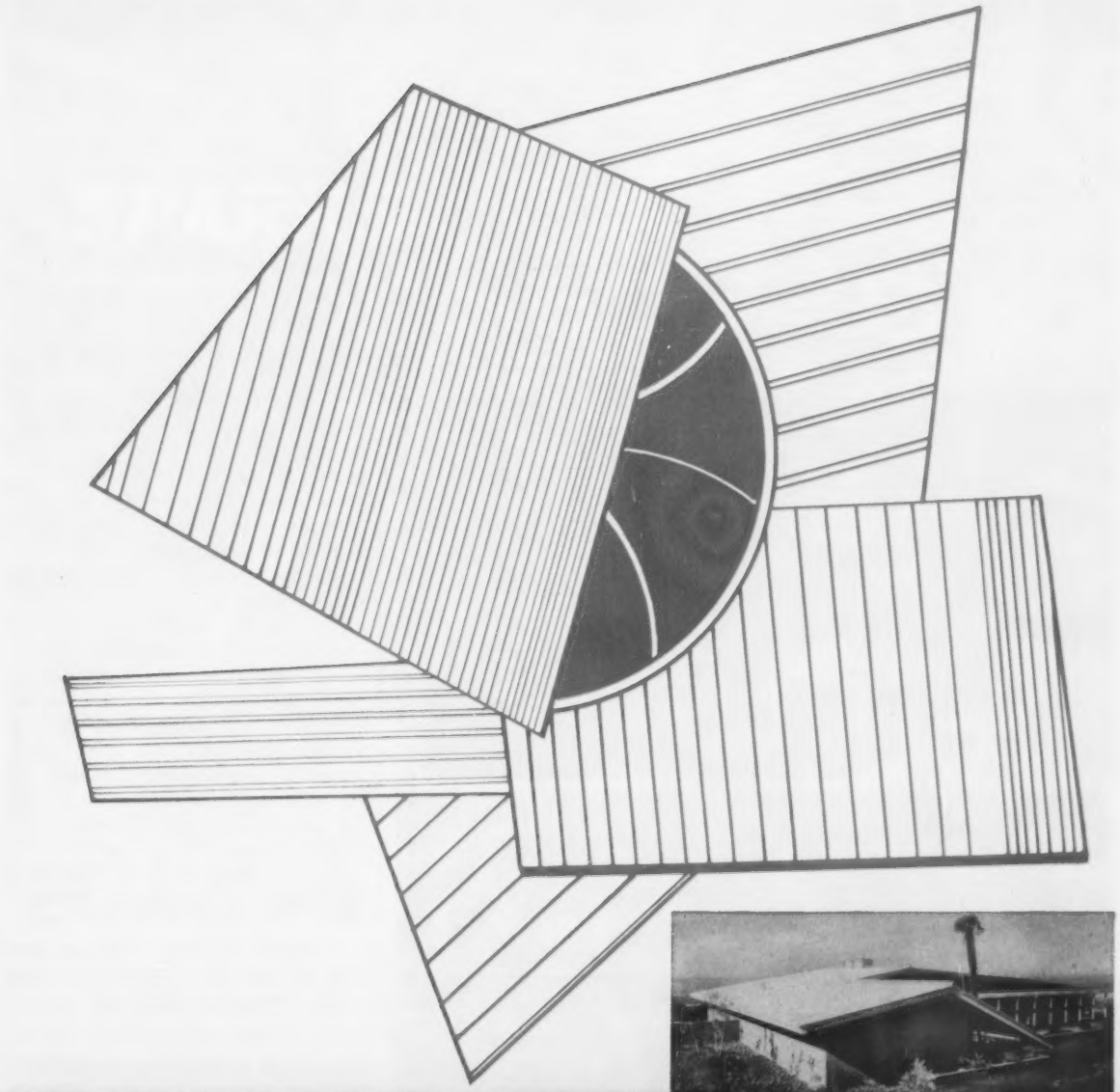

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Continued from page 196

especially important. Even in the beginning the citizens apparently paid much attention to the provision of open space within the walls of these cities. In the case of Stockholm, Germanic precedent was evidently more important than with Copenhagen.

While the book's illustrations are small in size, they are clearly printed and chosen with great care. A helpful bibliography is also included.

LEONARD K. EATON
Asst. Professor of Architecture
University of Michigan
Ann Arbor, Mich.

Symposium on Schools

Coordinated School and Community Planning. *Edited by John R. Boice, David Fromm, and Don Kenny. The School Planning Laboratory, School of Education, Stanford University, Stanford, Calif., 1959. 84 pp., illus. $2.50*

The 1959 School Building Institute held at Stanford University brought together a group of architects, educators, planners, and industry representatives, asking them to share their thoughts on the problems of co-ordinating school and community planning. The result is a series of 15 articles on such topics as planning for change, federal assistance in planning, automation, trends in school design, and the school of the future. Photographs are about equally divided between illustrations of principles suggested by the articles and scenes of the conference and Stanford campus.

E.P.

Before Building or Buying

How to Judge a House. *A. M. Watkins. All About Houses, Inc., 25 Ritie St., Piermont, N.Y., 1960. 33 pp., illus. $1*

When Mr. Blandings built his famous dream house and became entangled in practical difficulties, he went through a process all too familiar to the would-be house owner. Nowadays even the most optimistic approach the prospect of building or buying a house with some trepidation. Help is at hand. *How to Judge a House* is exactly what it claims to be: a guide. Architects, too, should find it handy—as a "primer" for clients, saving much fundamental explanation. Salient facts include: ways to judge design, floor plan, location (on the lot and in the neighborhood), structure; biggest causes of annual expense; function of the FHA; points to look out for in buying a used house; and suggested references for answers to the question "Who can check a house for you?" Watkins is the author of the analysis: "What's Wrong with America's Houses" (*Harper's Magazine*, February, 1960). Included with each book is a 120-point check-list —and a money-back guarantee.

J.W.F.

Economics of Industrial Location

New York Metropolitan Region Study. Volume 4, Wages in the Metropolis. *Martin Segal. Harvard University Press. Cambridge 38, Mass., 1960. 211 pp., tables. $4.75*

Continuing the excellent start toward development of an economic base theory for the New York Metropolitan Region, begun in earlier volumes of this series, Martin Segal has written a revealing study of the influence of wage and skill levels on industrial location in the New York area.

The argument of the book centers on the fact that, for most activities, the New York region is a high-wage area. Compensating for this (from the point of view of economic development) is the comparative unimportance of wage dif-

Continued on page 200

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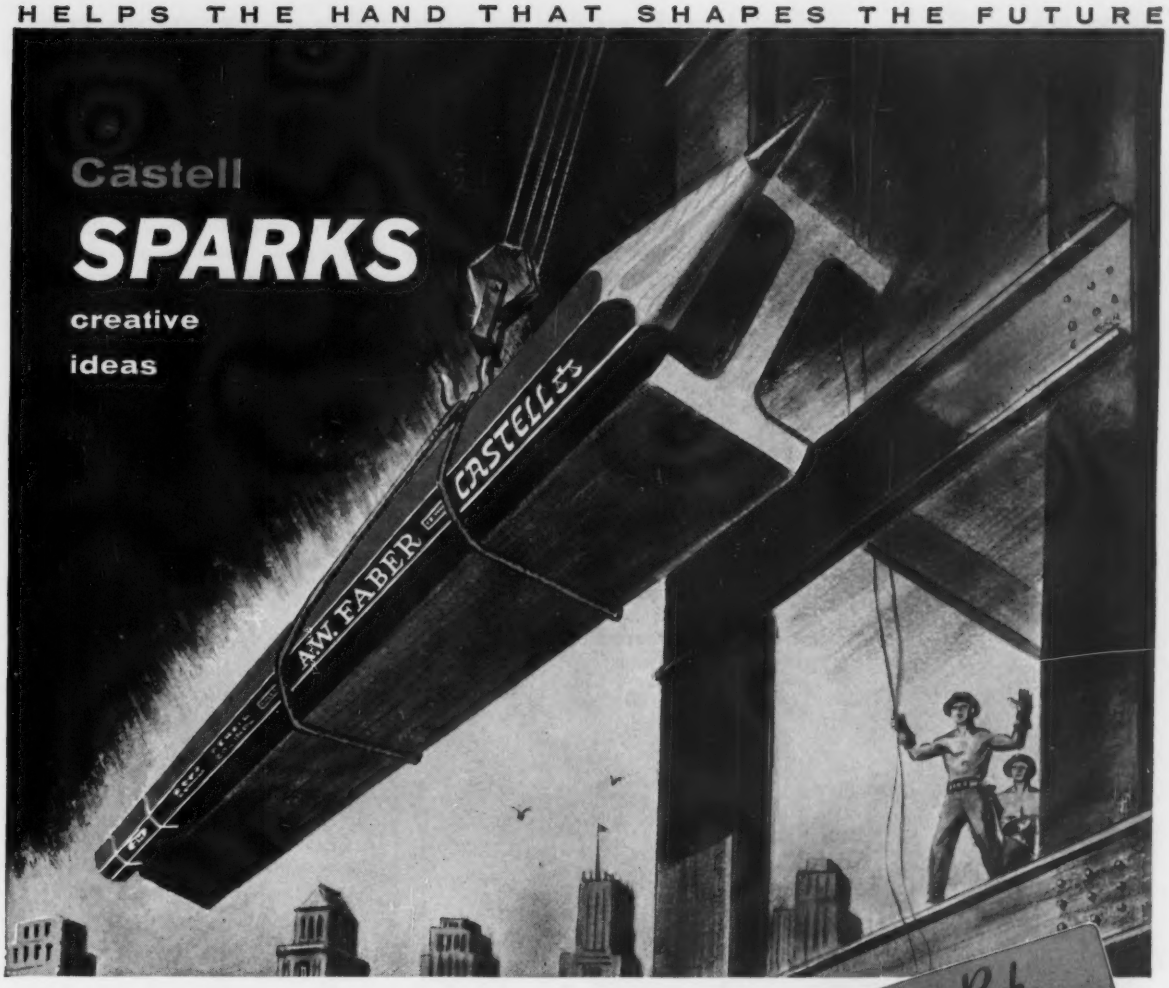

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Continued from page 198

ferentials in influencing the location pattern of most industries. All but a tiny portion of the region's jobs, at any given time, are located there because of reasons other than wages—because of the enormous local market for goods and services, the value of the external economies that are so extensively available in New York, a need for constant communication with related activities, and other types of nonwage factors.

Out of all jobs in the region, Segal estimates that some two percent are located there because of the need for certain labor skills whose price is unimportant because of their scarcity (what salary do you pay a Nobel Prize winner?), while only one or two percent are really subject to serious, direct wage competition with other areas. Yet this picture reveals only a part of the truth, since, as the tiny fraction of wage-sensitive jobs is lost in the face of low-wage competition from outside New York, new technological developments constantly tend to bring another segment of the region's jobs to the point where it must compete on losing terms with low-wage areas elsewhere.

Segal argues that only through a continuing, dynamic process of developing new industries can the New York area hope to maintain or improve its economic status. Hopefully, he indicates good reasons for believing that this is possible.

Interesting reading by itself, this book is of significant value in placing the important item of wages into the economic picture of our largest urban center. As is the case with earlier volumes of the series, this book also tells us much about metropolitan areas in general. New York's economy is different only in scale and composition from that of other areas; the findings of this study can be applied, with nearly equal force, to Detroit, Los Angeles, Boston, and others of our large metropolitan centers.

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Essence of the Capital

Doorway to Brasilia. *Aloisio Magalhães and Eugene Feldman. Falcon Press, 1713 Ranstead St., Philadelphia 3, Pa., 1954. Distributed by Wittenborn & Co., 1018 Madison Ave., New York 21, N. Y. illus. $12.50 (paperbound)*

That herculean accomplishment in human dynamics, Brasilia, is the subject of an impressionistic and significant volume. It contains a preface by John Dos Passos, and text by Oscar Niemeyer (Brasilia's architect), Lúcio Costa (Brasilia's planner), and Juscelino Kubitschek (Brazil's president). The book adds nothing new in terms of *fact* to what is already known of the much-heralded capital; the prime interest is in the remarkable collection of photographs that were created collaboratively by the Brazilian artist, Aloisio Magalhães, and the American printer, Eugene Feldman.

Continuous tone negatives with none of the usual screening, exposure control in the use of offset aluminum plates, heavily-printed color plates and lighter gray and black plates (reverse plate order) are an experiment in offset printing. The effect is startling. Brasilia, with its lively shapes, ruggedness, and contrasts, provides a choice subject for this medium.

The photos have the quality of paintings—some suggest abstract, linear constructions; others have free-form, nonobjective textures; still others show recognizable outlines of human forms. (There is one foldout photo of a group of construction workers busy on a pave-

Continued on page 202

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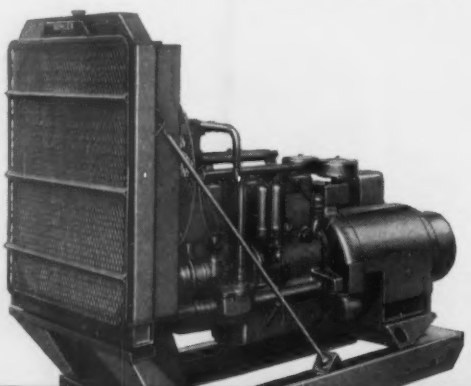

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Continued from page 200

ment; it is a well-chosen, yet seemingly spontaneous, grouping, with the contrast of black and gray-green creating an image of strong emotional appeal.) The total impact of all the photos brings to life the movement and energy, the human force and faith, that have created a city out of wilderness.

The edition is numbered, signed, and limited to 2000 copies. There are many foldouts, sometimes as large as four and six times the size of the book. The text is in English, French, and Portuguese. Two minor criticisms: the forms and foldouts have been bound together with glue, so that frequently a foldout will detach itself (a sewn binding would have prevented this); also, the paper covers tend to tear easily, a fault of most paperbound books. These are minor defects, however, in a book that captures and transmits the essential meaning of Brasilia.

FRANCIS J. S. HUGHES
New York, N. Y.

The Not-So-Mobile Home

Mobile Home Parks and Comprehensive Community Planning. *Ernest R. Bartley and Frederick H. Bair, Jr. Public Administration Clearing House, University of Florida, Gainesville, Fla., 1960. 147 pp., illus. $5 ($3 paperbound)*

The mobile home belongs in a mobile home park, runs the theme of this ably-written study of a complex problem for planners and community officials. It is not a small problem either—in the years 1954-58, one new mobile home was fabricated for every 10 non-farm dwelling units built. Since 1950, when there were half a million mobile homes in use (they were "trailers" then!), the number is estimated to have tripled, so that today nearly three percent of all Americans live in mobile homes. As a further complexity, the mobile home is not nearly so mobile as its name implies. An estimated 85 percent of all such units is permanently attached (moving less than once a year), and the average mobility of their owners, while high, is only twice that of all Americans.

The authors (one a political scientist and the other a planning consultant) are both one-time mobile home owners and present a good case for treating their comrades-in-caravan as respectable citizens, not as fly-by-night adult delinquents. They give short shrift to the individual mobile home set down in a neighborhood of conventional structures, but maintain that the mobile home lo-

Continued on page 204

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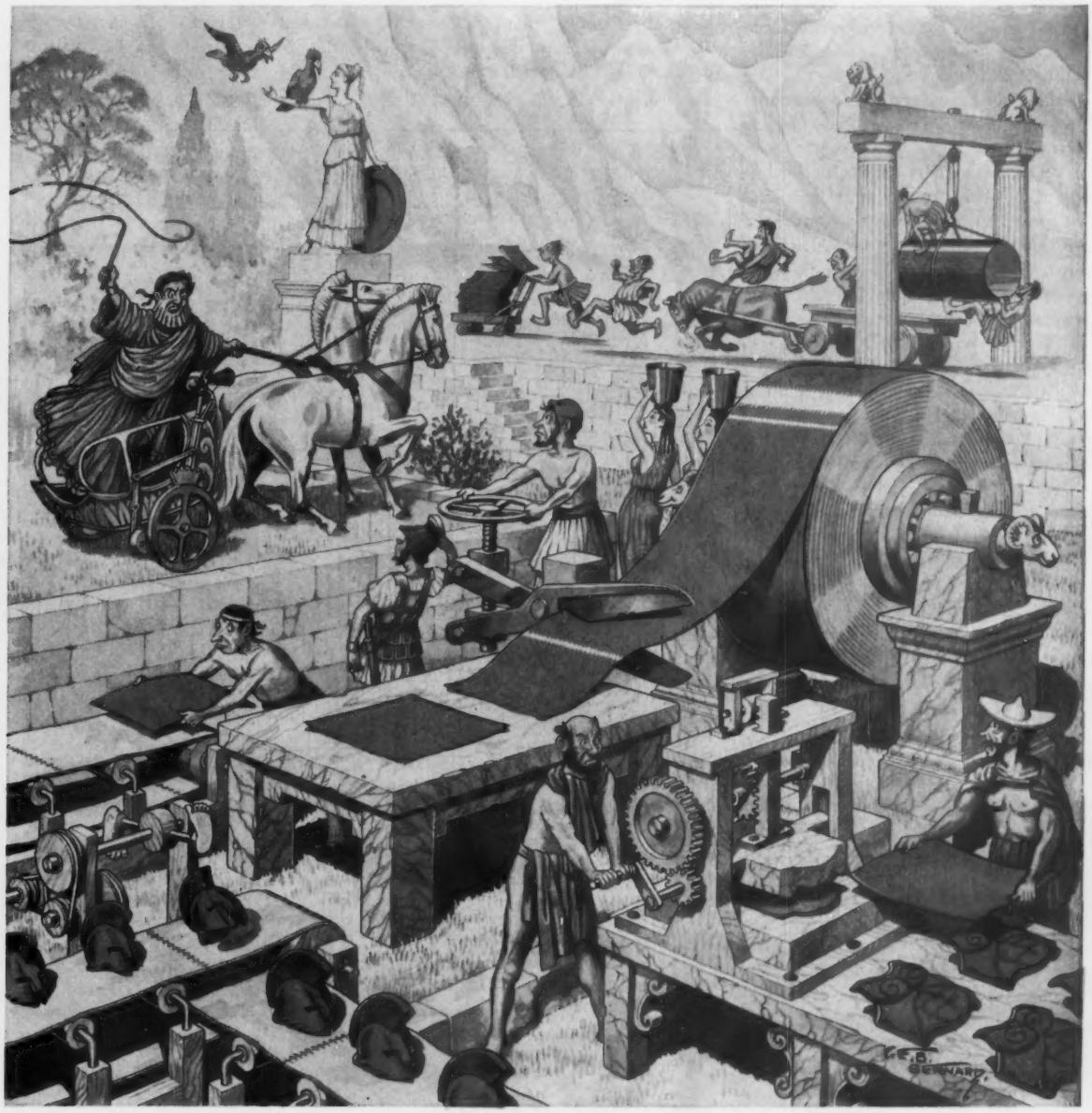

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Continued from page 202

cated in a well-designed park is as decent a way to live as any other and should be recognized as such. Minimum standards for such a park, according to the authors, should insist on at least eight to ten acres over-all and at least 2000 square feet of land per unit. They also suggest 50 units in a minimum park operation as a sound figure for financial success. For planners, their key recommendation is to consider the mobile home park as a multifamily residential use. Buffer it with space and greenery, if you will, but do not relegate it to unwanted sites surrounded by commercial or industrial uses.

Where the authors fail to be convincing is in their treatment of individual lot sizes; they make no direct comparison with conventional houses, for which 6000-square-foot lots have become a quite generally-accepted minimum. Why, therefore, should 2000 square feet be enough for a not-so-mobile home? This is especially the case when one considers that the newer mobile homes run to ten-foot widths and sixty-foot lengths; with folding porches or carports added, the size approaches that of a small bungalow. There may be valid reasons for treating mobile homes differently from other houses, in those respects in which they differ, but the need for light, air, privacy, and yard space is surely no less for a semi-fixed mobile home than for a conventional house.

DAVID A. GROSSMAN
Advance Planning Associates
Cambridge, Mass.

A Sprawling City Recentralizes

Pilot Plan for Havana. *Paul Lester Wiener, José Luis Sert, Paul Schulz: Town Planning Associates. Distributed by Wittenborn & Co., 1018 Madison Ave., New York 21, N.Y. 53 pp., illus. $35*

This large (18″ x 24″) beautifully produced limited edition is the report made by Town Planning Associates to the former government of Cuba after work as Consultants to the National Planning Board from 1955 through 1958. It consists of plans, maps and diagrams, and some suggested architectural solutions, with text in Spanish and an accompanying translation in English. While it might seem an anomaly under present conditions on the island, it is one of the most complete studies that has been made of an important city in relation to its milieu, and surely is the most thoroughly documented illustration of the methods of presentation worked out by CIAM over its years of congresses. As the text admits, the presentation is almost oversimplified, so that it can be understood by the layman.

Havana is studied here not only as an important center of international travel, but also as the largest urban center in a country which was beginning to develop other urban points without too much thought even for a national road network.

The city itself is of interest to planners because of its rapid sprawl growth (a system of "recentralization" is here proposed, as well as clusters of peripheral communities "like the villages of old Cuba"), and because of its very handsome, but rapidly degenerating Old City and a potentially striking civic sector. (Much thought is given in the study to preservation as well as development of controls for the old part of the city, and to planning for five specific civic nuclei.)

It will be interesting to see whether under the present regime any of the thoughtful suggestions made by this group will be carried out. For instance, much study was given to the develop-

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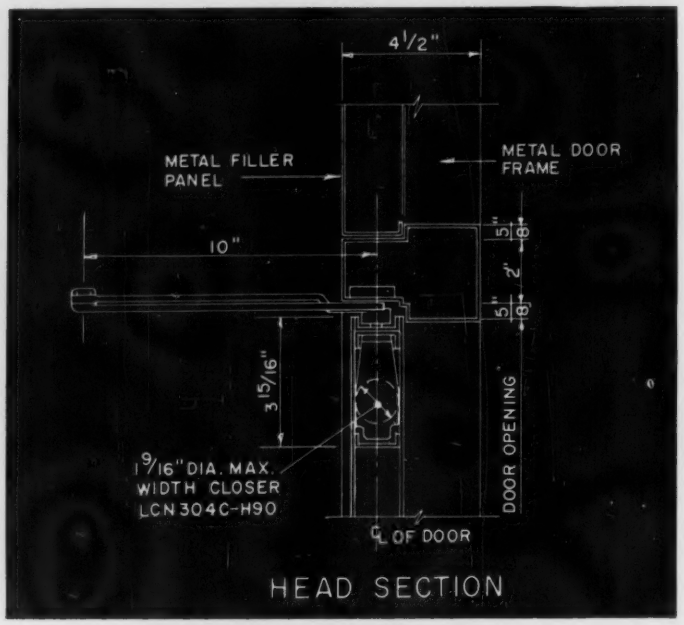

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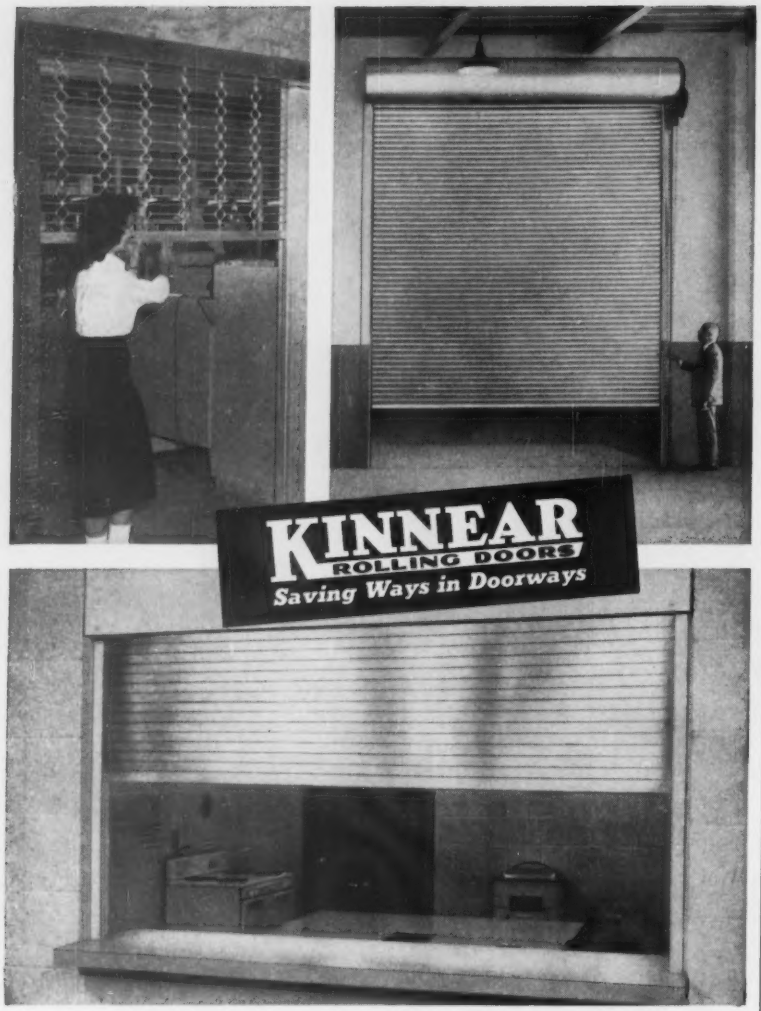

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Continued from page 204

ment of East Havana, and the possibility of opening up the eastern side of the harbor approach, now that there is a tunnel connection. Not only would this develop highly usable land adjacent to the urban center, but it would also make the Old City more central and more of a focus for urban activity. A residential Presidential Palace is proposed between Morro and Cabana Fortresses and is detailed rather fully. One would think that it might appeal to a Castro type as much as it did to a Battista type.

T.H.C.

Pictures without Programs

Interiors Book of Offices. *Edited by Lois Wagner Green. Whitney Library of Design, 18 E. 50 St., New York 22, N. Y., 1959. 163 pp., illus. $12.50*

The design of offices, as presented in this book, is a new profession. According to the author, office planners in or out of architectural firms make up a group of designers with its own field of practice and its own principles of planning.

A book with this concept, if intended to aid professionals in office-design work, should have considered such elements as time-and-motion studies, lost-time factors, survey and inventory techniques, the development of work-station standards and adjustment for existing conditions, the evaluation of "waste space," the effect of layout on employe productivity, and a myriad of planning criteria that challenge the conscientious architect. Any explanation of the professional processes involved, however, is missing.

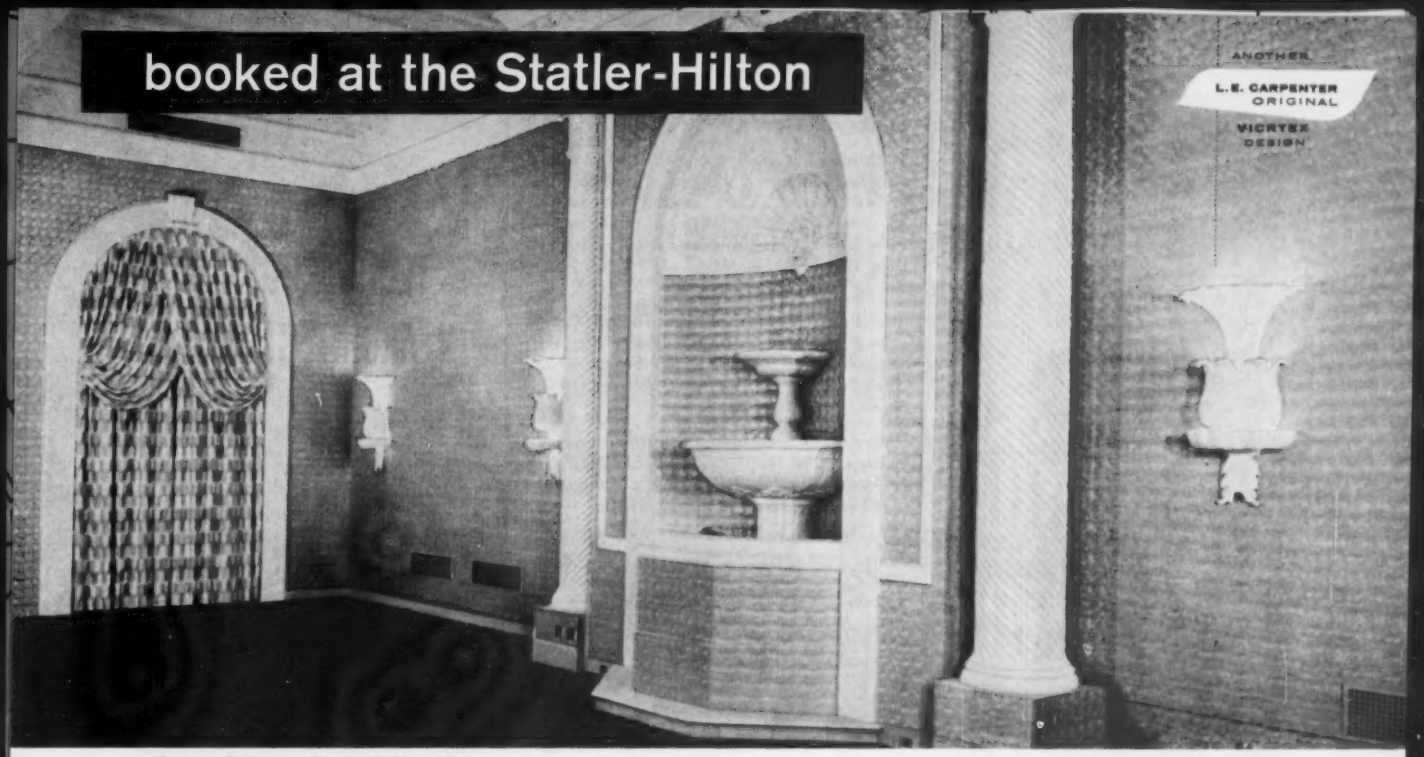
If, on the other hand, the author's intention was to increase public appreciation of good office design, she has succeeded well. The photographs are interesting and well discussed.

A handful of firms, only one of which is architectural, dominates the presentation, and most projects shown are of large or metropolitan New York offices. This selection tends to decrease the book's usefulness further, as many architects repeatedly face design problems of the small offices auxiliary to educational, religious, industrial, health, and other facilities. Architects might have benefitted more from an analysis of the specific nature of space programming and planning than from pictures. In fact, perhaps the book will be most enjoyable to the architect's clients waiting in his reception room.

WILLIAM SMULL
New York, N. Y

Continued on page 208

booked at the Statler-Hilton



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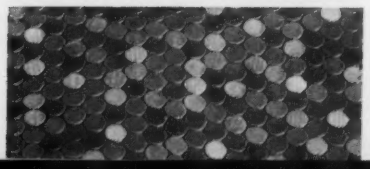

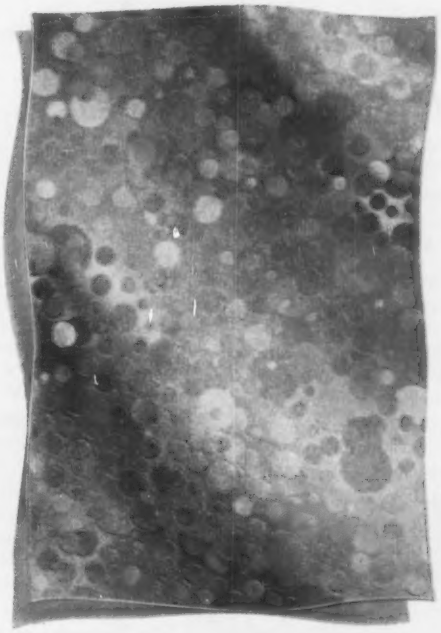

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Methods of Reducing the Cost of Public Housing. Research Report of the School of Architecture, Pratt Institute sponsored by New York State Division of Housing. Published by Plastics Merchandising Dept., Dow Chemical Co., Midland, Mich., 1960. 139 pp., illus.

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The Dynamics of Park Demand. Marion Clawson. Regional Plan Assn., 230 W. 41 St., New York 36, N. Y., 1960. 39 pp., illus. $3

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GEORGE PATTON & ASSOCIATES, Landscape Architects, 1701 Walnut St., Philadelphia 3, Pa.

MEYER & KASINDORF, Architects, 10 S. Middle Neck Rd., Great Neck, N.Y.

TED ARTHUR HOMA, Architect, 25 W. 43 St., New York 36, N.Y.

ALBERT S. HARTHEIMER, Architect, 98 Columbus St., Albany 10, N.Y.

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BARNET GLICKER, Architect, Juniper Bldg., S. W. Cor. Juniper & Walnut Sts., Philadelphia 7, Pa.

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New Firms

WINSTON ELTING and WILLIAM F. DEKNATEL, principals in firm of ELTING, DEKNATEL & ASSOCIATES, INC., Architects-Planners-Engineers, 25 E. Jackson Blvd., Chicago 4, Ill.

JOSEPH FULLER, Architect, 103 Park Ave., New York 17, N.Y.

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Continued on page 214

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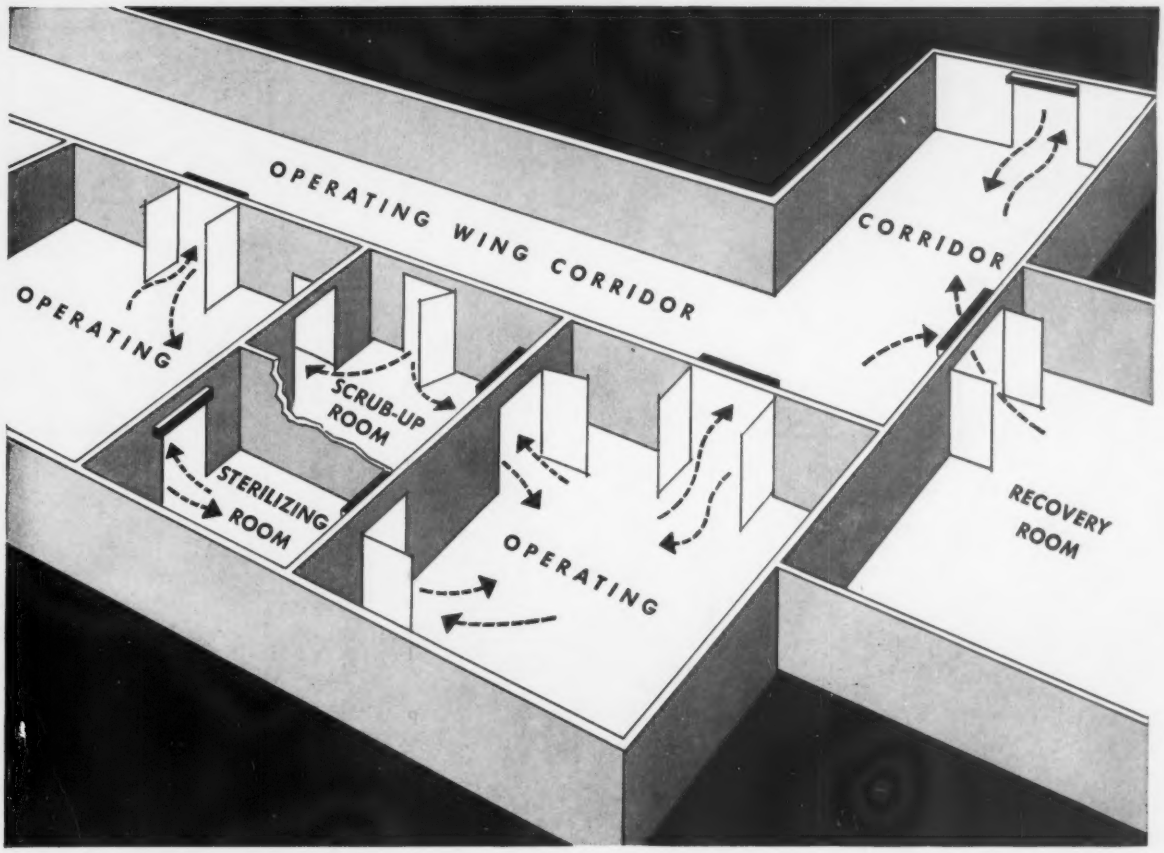

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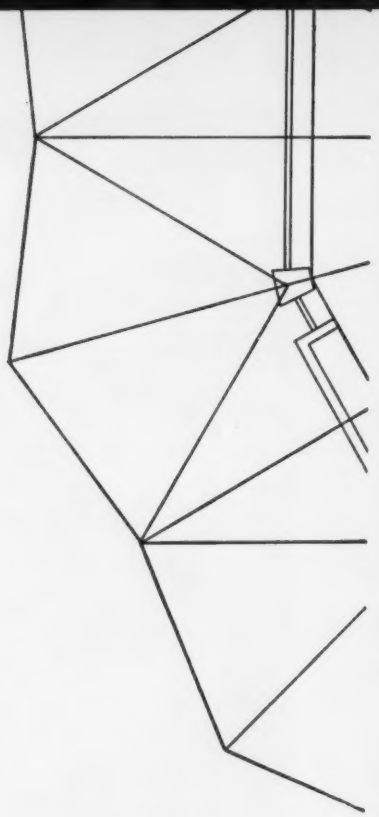

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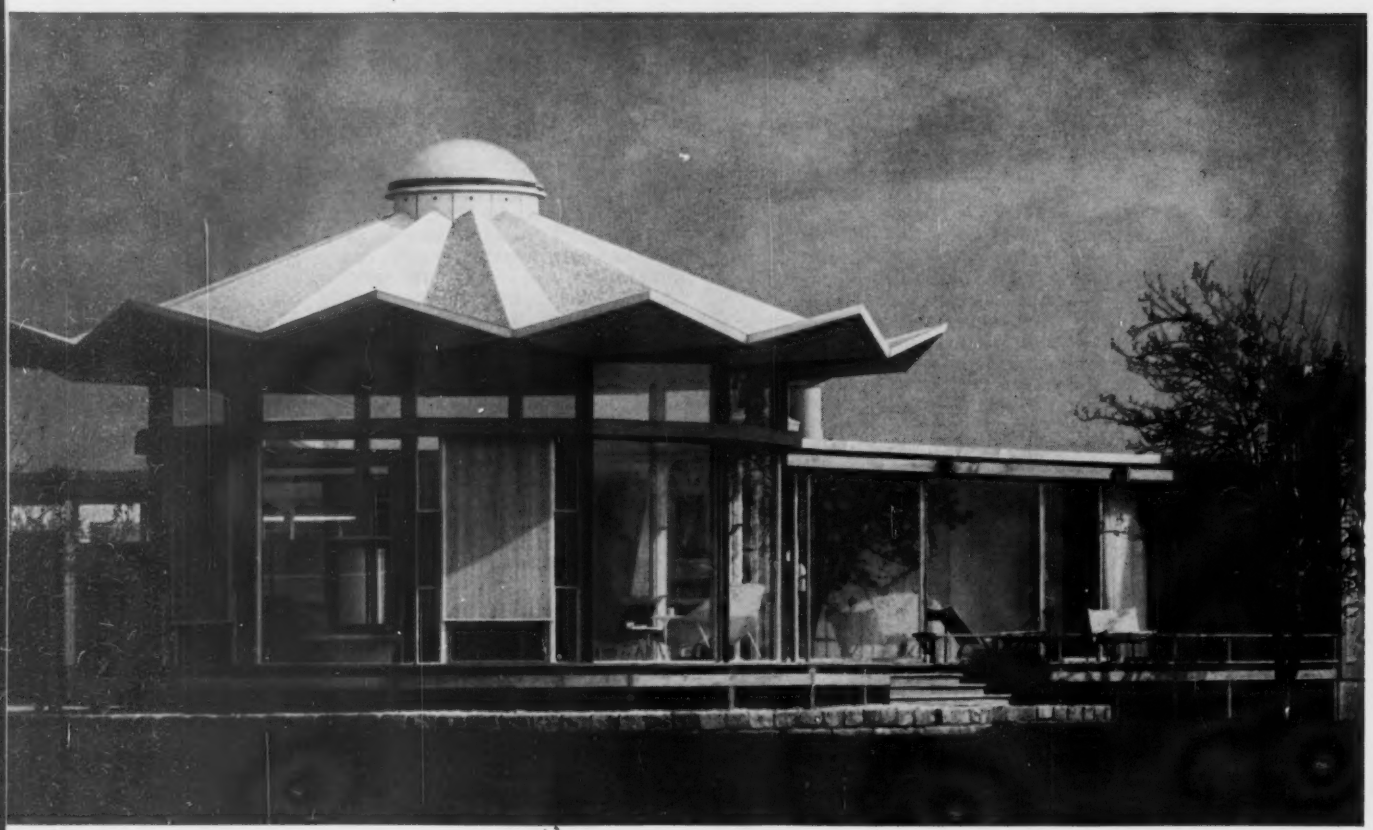

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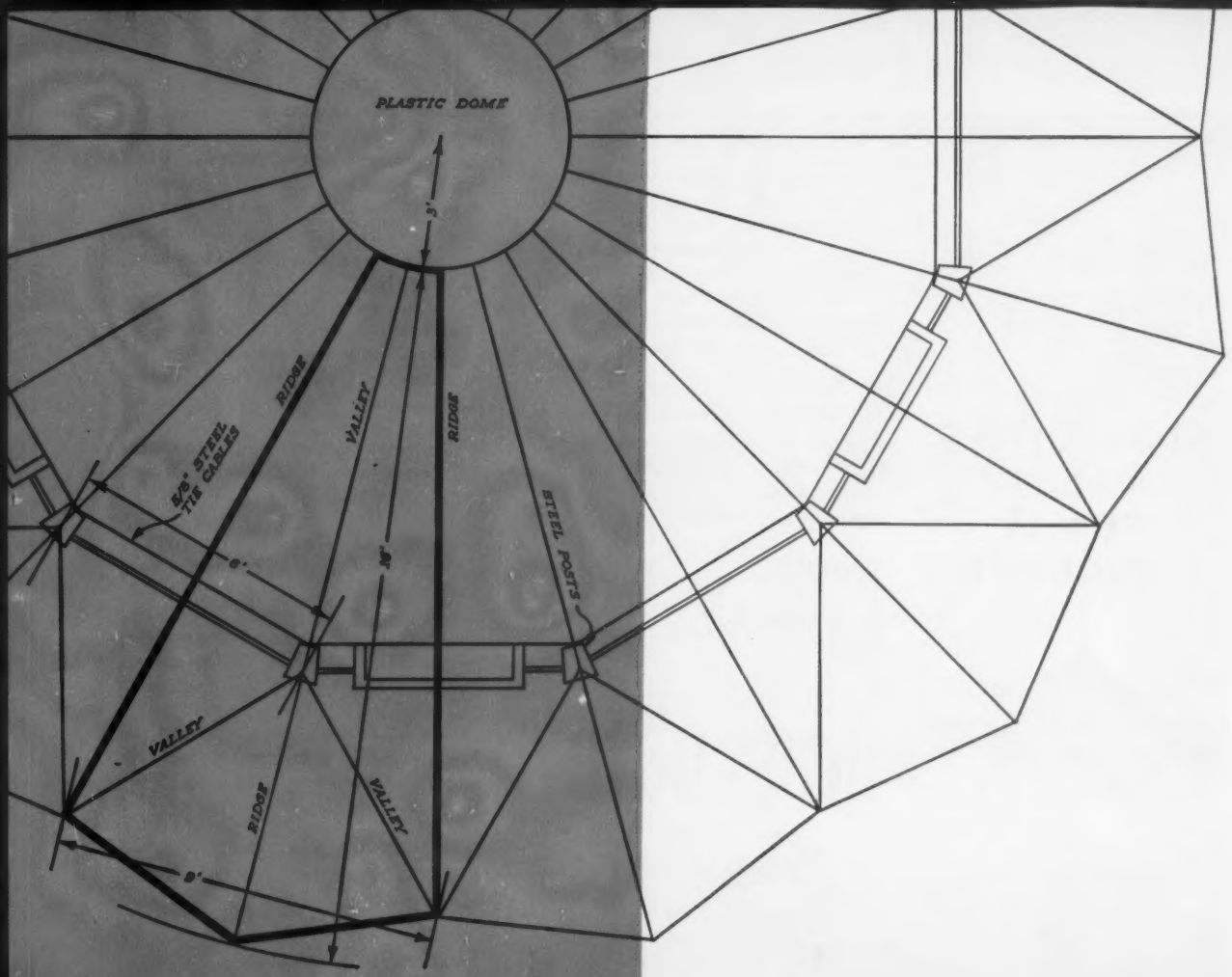

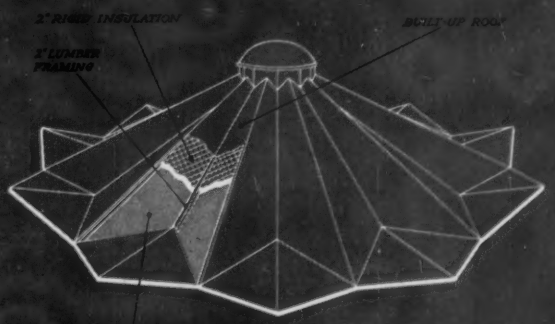

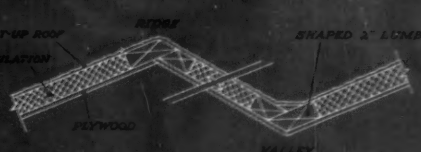

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THE PLEATED ROOF that crowns this pavilion-like living room is a prime example of the bold and imaginative forms derived from the basic fir plywood folded plate principal. Shape rather than mass is the key to its strength. The distinctive sawtooth configuration capitalizes on fir plywood's high diaphragm strength to create, in effect, a series of rigid, lightweight "V" beams. Intermediate posts, trusses and bulky framing are eliminated.

In this sophisticated circular design, the plywood folded plates provide a dome, spanning 26 feet, wall to wall. No central support is required. Where desired, far greater spans could be achieved utilizing the same basic system.

The roof itself is composed of 12 basic "boat-shaped" fir plywood components which were crane-lifted into position atop the steel supporting columns. Each component, in turn, is made of four triangular pieces of ¾" overlaid fir plywood, perimeter framed and interconnected with shaped two-inch lumber. Alternate projecting and recessed stiffeners along the ridges connect each component with its neighbors. Each component combines roof deck, insulation and finish ceiling.

For basic design data or other information, write (USA only) Douglas Fir Plywood Association, Tacoma 2, Washington.

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Continued from page 210

WERNER STURM, and WALTER F. CONLIN, JR., named general partners; WERNER GOTTSCHALK and R. BRUROCK HARSTEAD, consultants; and DR. HANNS-KARL BANDEL, an associate of SEVERUD, ELSTAD, KRUEGER ASSOCIATES, Consulting Engineers, N.Y.

GERALD LOU ALLISON and GREGORY M. B. TONG, made associates in firm of WIMBERLY & COOK, Architects, Honolulu, Hawaii.

A. WHITNEY MURPHY, made a partner in PERKINS & WILL, Architects, White Plains and Chicago.

RAYMOND ITAYA joins staff of T. Y. LINN & ASSOCIATES, Consulting Engineers, Van Nuys, Calif.

HARRY R. WILSON, named an associate in Los Angeles firm of LEACH, CLEVELAND & ASSOCIATES, Architects-Engineers.

OLIVER J. FOSTER, JR., and FRANK J. RIDOUT, made associates in firm of MOORE & SALSBURY, Architects, West Hartford, Conn.

ROBERT W. HEGARDT, joins New York firm of BALLARD, TODD & SNIBBE, Architects.

Elections, Appointments

T. K. KUTAY, made vice-president of DANIEL, MANN, JOHNSON & MENDENHALL, Architects-Planners-Engineers, Los Angeles, Calif.

WILLIAM A. MCALISTER, elected president of THOMAS J. DAVIS, INC., Architects-Engineers, Los Angeles, Calif.

CHARLES G. GABLE, joins firm of CHARLES LUCKMAN ASSOCIATES, Architects-Engineers-Planners, Los Angeles, Calif., as a project architect.

HERBERT POMERANTZ, appointed project manager of commercial and industrial designs at S. W. BROWN, Consulting Engineers, New York, N.Y.

FRED ERVIN, joins the architect-engineering firm of ENGINEERING SERVICE CORPORATION, Los Angeles, as division engineer in charge of planning and design.

SAUL SAULSON, named director of mechanical engineering, and G. S. WHITTAKER, made chief of the mechanical division at ALBERT KAHN ASSOCIATES, Architects-Engineers, Detroit, Mich.

Continued on page 218

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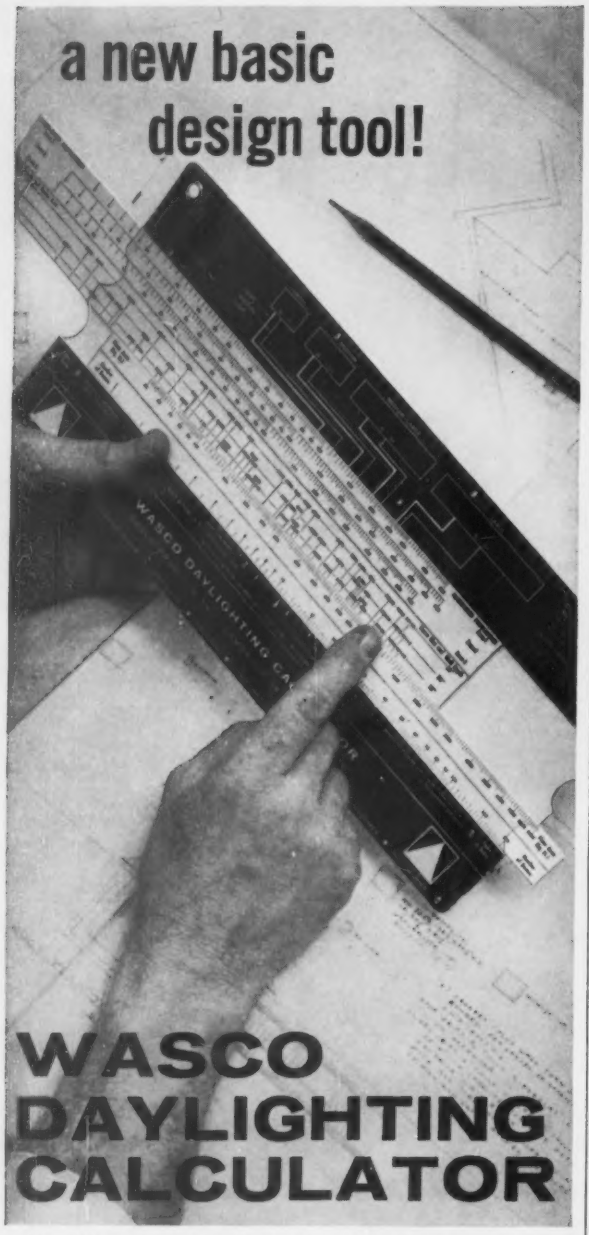

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J. SAMUEL GARRISON, new business administrator for M. TONY SHERMAN & ASSOCIATES, Architects-Engineers, Miami, Fla.

G. W. LETTENEY, named assistant treasurer of STONE & WEBSTER ENGINEERING CORPORATION, Boston, Mass.

FRED S. DUBIN ASSOCIATES, Consulting Engineers, 7 E. 47 St., New York, N.Y. A. ROGER KELLY will be associate manager of the office.

FALCONER JONES, elected president of ART METAL, INC.

Name Change

VALDEMAR H. PAULSEN, Architect, 621 Bergen Ave., Jersey City 6, N.J.; formerly ZIEGLER, CHILDS & PAULSEN. FREDERICK W. MENNE and RICHARD B. RIVERDO, named as associates.

Organization Continues

The office of SEELYE, STEVENSON, VALUE & KNECHT, Consulting Engineers, New York and New Rochelle, will continue its practice and organization as it existed prior to the death of ELWYN E. SEELYE.

New Companies

The formation of AMERICAN SPECIALTY PRODUCTS COMPANY, East Orange, N.J., is announced by its president, FRANK W. HAYES. The new company is licensed by CAFCO, subsidiary of UNITED STATES MINERAL WOOL COMPANY, to sell and apply its products.

UNITED ACOUSTICS COMPANY, New Canaan, Conn., enters the field of acoustical consulting, with STANNARD M. POTTER as its president.

Merger

THE ENGINEERS COLLABORATIVE, Consulting Structural Engineers of Chicago, have merged with the firm of WISS ASSOCIATES in order to broaden their services to architects. Also announced by TEC is the naming of RICHARD ELSTNER as an associate member of the firm.

Expansion

The New York industrial design firm of GEORGE NELSON & COMPANY, INC., is now being represented on the West Coast by MITCHELL A. WILDER, 2334 Kenilworth Ave., Los Angeles, Calif.

P/A Congratulates . . .

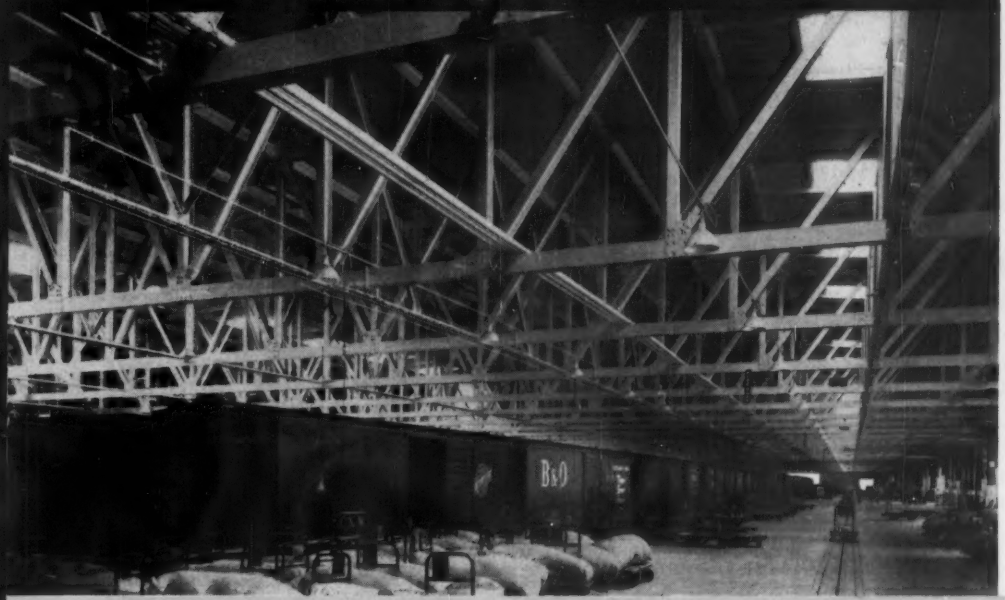
FREDERICK H. ELIAS, made vice-president of construction at the real estate and investment firm of THE KRATTER CORPORATION.

LORING S. BROCK, named executive vice-president of the Products Division at UNITED STATES STEEL CORPORATION.

According to architect Leo A. Daly, this large freight depot was designed to provide completely enclosed facilities for loading, unloading, and storing train cargos. The long clear-span allows uninhibited movement for efficient freight handling, and calls for admitting natural daylight – with some provision for venting gases and smoke in the case of fire.

FREIGHT DEPOT BY LEO A. DALY CO.

DAYLIGHTING BY WASCO



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ARCHITECT — R.A., N.C.A.R.B. Certificate, Degree. Extensive experience, now responsible for production of drawings and co-ordination in New York City architectural firm engaged in commercial and industrial projects. Seasoned job captain and checker. Married, one son, requires change to California. Will come for interview on own account. R. F. c/o Vohryzek & Co., 25 California St., San Francisco 11, Calif.

ARCHITECT—34, experienced industrial, community, apartment and family house designer; well experienced detailer; numerous award winner. Desires challenging, permanent position in progressive medium or large office. Employed; practice here and abroad; speaks English, German. Prefers New York, Mass., Conn. or Calif. Detailed resume on request. F. Berg, 1753 Virginia Ave., Elmont, L. I., N. Y.

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Continued on page 225

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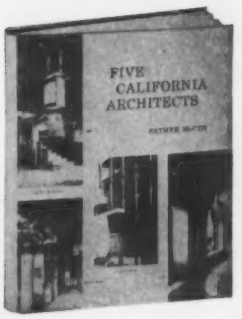
The first full study of the pioneering work in modern architecture of Bernard Maybeck, Charles and Henry Greene, Irving Gill and R. M. Schindler

FIVE CALIFORNIA ARCHITECTS

by ESTHER McCOY
with a section on the Greenes by RANDELL L. MAKINSON



HERE IS the exciting history of the rise of the California school of architecture as seen through the work of five men who gave it impetus and direction. Author Esther McCoy writes from the viewpoint of one who has been closely associated with both architects and their achievements. She brings to this book not only a profound understanding of their professional careers and major works but also a penetrating critical appraisal of their legacy to the present generation of architects.

The book reflects the vitality, the imagination, the eagerness to experiment with new forms and materials that characterize the contributions of Maybeck, the Greenes, Gill and Schindler to the growth of American architecture. Many of the striking photographs were taken by the author herself to illustrate design innovations traceable to these men, such as the glass wall with sliding doors, the shed roof with wide overhang, the moveable non-bearing partitions, the use of poured concrete, and the first small low cost homes. These photographs, along with an abundance of drawings and design plans will serve as a source of inspiration for today's builders and designers.

MAYBECK

Presents a penetrating appraisal of Maybeck's unique ability to blend the classical and vernacular styles with ease and authority. Mrs. McCoy says of Maybeck, "For him there was no dead architecture. All ages were the present, and when he became a practicing architect, he went to the past to be refreshed, as he dipped into the industrial world of the Twentieth Century, bringing together disparate elements in a timeless world of his own invention."

Shown here is the portico entrance of his Christian Science Church in Berkeley. Maybeck called this church—recognized today as one of the great works of modern architecture—a creation in the spirit of the past.

1960
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GILL

Describes Gill's early work in monolithic concrete and his struggles to introduce flush detailing in interiors, and to strip ornaments from exteriors. Mrs. McCoy also describes the architect's activities in community housing, including the design and site plan for a low rent cottage court for workmen's families.

The loggia pictured here is an excellent example of two great influences on Irving Gill's work—the missions and adobes of California and the architect's own passion for simplicity.

SCHINDLER

R. M. Schindler arrived in California in 1921 by way of Vienna and Wright's office in Taliesin. He called himself a space architect and immediately set out to introduce new shapes into architecture. In his notes on the Wolf house shown here, he wrote that he had consciously abandoned "the conventional conception of a house as a carved mass of honeycombed material protruding from the hillside, and created a composition of space units to float above a hill." The book includes a detailed discussion of Schindler's structural systems which permitted him to use concrete in an interplay of abstract forms.

THE GREENES

Randell L. Makinson traces the development of the Greenes' highly individualistic style from its source—a deep study of wood, an appreciation of the Japanese, a respect for the Swiss, and a love of nature—to its fulfillment in their bold use of heavy timber, projected rafters, extensive masonry walls, stained board and batten sliding, and the incorporation of the garden into the total design.

Numerous photos, such as this one of the entry hall of the Blacker house, beautifully illustrate their success in the use of natural materials.

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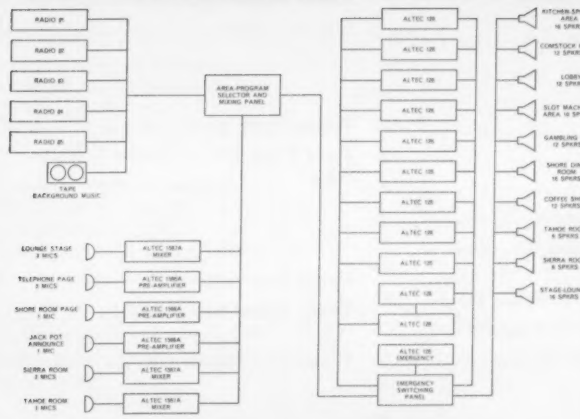

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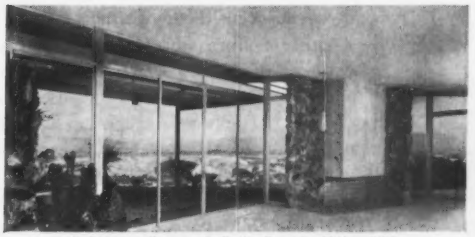

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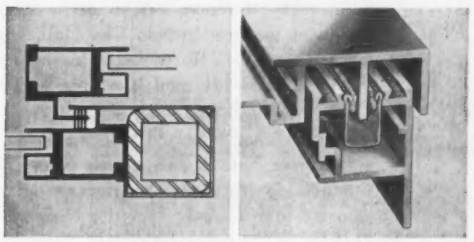

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P.S.

Thirty Years Ago architects were using much the same words to express their beliefs, but the work they were doing to implement those words was very different. Once in a while I leaf back through old issues of *Pencil Points*, P/A's predecessor, to chase down a reference of some sort or another, and I always find myself becoming fascinated at both differences and similarities to problems and procedures of today. This morning I had the July, 1930 issue on my desk, and I suddenly realized that it was precisely thirty years ago that this particular issue was being put to bed.

Feature of the issue was a report on a small house competition which the magazine had run. First prize winner was John T. Grisdale, then and now of Philadelphia, and among the runners up were Otho McCrackin, Burton Ashford Bugbee, Jefferson Hamilton, Elmer A. Johnson, Francis Keally, and Floyd Yewell. The Jury report, written by Paul Cret, Chairman, indicated that the Jury searched "first for courage, strength, simplicity; second for sheer beauty; third for clear thinking; fourth for originality." The houses for the most part were romantic, with stone-faced dormers breaking through slate roofs. Plans were inclined to feature large stair halls, and although the combined living-dining room had made its appearance, there were still huge independent pantries adjacent to the kitchens.

Another feature story in this issue was an appreciation of the rendering techniques of Robert A. Lockwood, who used various media in his desire to "render architecture as if it were warm with life and companion to its surroundings." Lockwood, according to his biographer, Robert Dennis Murray, was a lusty character: "When he works he works as though he means it, and when he gets drunk, he gets cockeyed."

An article entitled *Some Radio Publicity*, reprinting a talk made by John J. Wade over Station WKBW in Buffalo, New York, was illustrated by renderings published the day of the talk in a Buffalo newspaper, "so that listeners could follow the references." Who needs TV? Wade primarily plugged his firm's design of the new Buffalo City Hall, a project which he described as "in the modern manner." He spoke to his audience of the time and effort involved in making clay study models of the column caps for the colonnade across the front of the building.

The magazine reported that Walter L. Reichart had won the Rome Prize, for a Georgian Church and Parish House, with Earl Chester Morris and Ulysses Floyd Rible other finalists. Harvard announced scholarships, one of which was won by Mario Ciampi on the basis of a neo-Classic bank design. Moreland Griffith Smith, of Montgomery, Alabama, won first prize in the magazine's monthly competition, Class IV (original letters). A "young draftsman . . . who has had three years of experience in a well-known out-of-town architect's office" advertised for a job in a New York office "where hard-working and ambitious men are appreciated." The salary he asked was $30 a week.

The advertising pages of that issue were filled by many of the firms which still reach architects through PROGRESSIVE ARCHITECTURE. Some have dropped along the way, though, and others have turned to the manufacture of products now more in demand than art stone mantelpieces, Tudor stone roofs, decorative pierced-screen radiator covers, and Venetian-mirrored bathroom cabinets. I was astounded to recall how many terra cotta producers were competing for the architect's attention in those days.

One other item in this issue made me realize that times have changed. The magazine had appropriated $10,000 for the preparation and distribution of a document titled *The Value of the Architect's Services*, which was published that month as an insert, with comments invited. I thought it was well written, persuasive, and altogether an excellent early attempt at public relations plus public education. I turned to the next issue to see what the reaction had been and found Edgar Williams complaining that it was "too long" and "almost as though the architect were justifying his existence." Alexander Trowbridge doubted whether "the public would read a document of that kind." And so on. It has taken a long time, but the need for reaching the public with some information about architect's services does seem better understood today.

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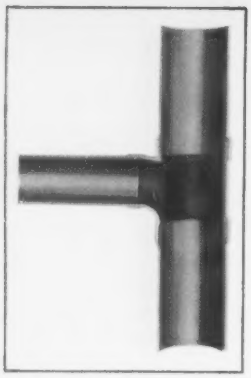

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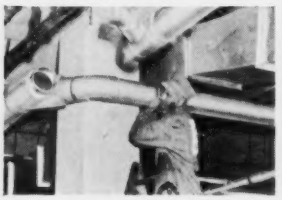

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